



Birds of Parque Nacional do Caparaó, Atlantic Forest, southeastern Brazil

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Abstract

Parque Nacional do Caparaó is located in the Serra do Caparaó in the southeastern region of Brazil. It lies on the border between the states of Espírito Santo and Minas Gerais. It is a large fragment of Atlantic Forest vegetation, with altitudinal variation from 630 to 2,892 m. We present an annotated list of bird species found in the park based on data collected from 2012 to 2018. We recorded 216 species, including 66 endemic, 22 threatened, and 17 newly recorded species. To complete the list of species, we added data available in several bibliographic sources and digital databases, bringing the total number of bird species in the park to 348 and including 98 endemic and 33 threatened species. This work is the first to present an updated list of birds for the park, and the data presented show the importance of this protected area for conservation of birds in the region.

Keywords

Birdlife, conservation unit, diversity, inventory, Serra do Caparaó

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Introduction

Brazil has an incredibly rich avifauna, representing almost a quarter of the world's bird species, but Brazil is also among the countries with the greatest number of globally threatened species (Pacheco et al. 2021; Bird-Life International 2021; Remsen et al. 2021). This is also true for the Atlantic Forest, a hotspot of global biodiversity which harbors many of these species (Stotz et al. 1996; Myers et al. 2000).

The Atlantic Forest originally extended along the whole Brazilian coast, with small portions in Argentina

to the south and Paraguay to the north (Morellato and Haddad 2000). Only 12.4% of the original forest cover still remains, scattered in small unconnected fragments (Ribeiro et al. 2009; SOS Mata Atlântica 2020; Projeto MapBiomass 2021). The high diversity and high rates of endemism and endangered species make this biome a hotspot for global biodiversity and a priority for conservation (Myers et al. 2000).

Parque Nacional do Caparaó (PARNA Caparaó) is a federal conservation unit in the Serra do Caparaó, a

mountain range that is part of the Serra da Mantiqueira, which has Atlantic Forest vegetation throughout. This national park straddles the border between the states of Espírito Santo and Minas Gerais and comprises about 32,000 ha. The elevation of the park ranges from 630 to 2,892 m and includes Brazil's third highest peak, Pico da Bandeira (ICMBio 2015). It is part of the Central Biodiversity Corridor of the Atlantic Forest (Galindo-Leal and Câmara 2005), which is under pressure from deforestation, hunting, introduction of exotic species, urban and industrial expansion, tourism, and degradation of mangrove and restinga ecosystems (Aguilar et al. 2005).

The first known ornithological expeditions to the region date back to 1922, when Ernst G. Holt and Pedro P. Peixoto-Velho collected specimens in the Caparaó Mountains (Peixoto-Velho 1923). In 1929, Emil Kaempfer explored the PARNA Caparaó and its surroundings, which resulted in collection of hundreds of specimens (Naumburg 1937, 1939). Other naturalists who briefly visited and collected specimens in the Caparaó Mountains were Emilie Snethlage in 1929, Helmut Sick in 1941, and Augusto Ruschi in 1957 (Bauer 1999; Sick 2001; Vasconcelos and Pacheco 2012). Other sporadic visits to the park resulted in additional specimen collection along with audiovisual records, with data now dispersed in several collections and citizen-science platforms. However, these have never been fully reviewed or published.

Although the Caparaó Mountains attracted researchers' interest since early 20th century, there is little information published about the region's avifauna. Ruschi (1978) presented a complete list for the park, but with many controversial and doubtful records (Pacheco and Bauer 2001), while Vasconcelos (2003) presented data specifically for PARNA Caparaó's highlands. Therefore, most information is in gray literature, such as technical reports, dissertations, and hard-to-find journals (e.g., Peixoto-Velho 1923; Bauer 1999; de Paula and Carvalho 2007), or dispersed in books and scientific papers with brief observations from PARNA Caparaó (e.g., Melo-Júnior 1996; Vasconcelos and Rodrigues 2010; Chaves et al. 2015). Furthermore, there are hundreds of bird records for PARNA Caparaó in citizen-science online platforms, collected by many collaborators.

Thus, our aim is to present a list of birds of Parque Nacional do Caparaó based on data collected from 2012 to 2018. To have a more complete checklist of the park's avifauna, we also present an updated concatenated list of birds for Caparaó National Park, including records made by other authors and citizen scientists.

Study Area

PARNA Caparaó is a Brazilian national park managed by the Chico Mendes Institute for Biodiversity Conservation (ICMBio). It is located in Serra do Caparaó (20°19' – 20°37' S and 041°43' – 041°53'W) and straddles the border between Espírito Santo and Minas

Gerais (Fig. 1). The predominant climate, according to the Köppen classification, is the Cwb type, subtropical highlands with dry winters, where temperature depends strongly on the relief. The relative humidity is around 70%, with temperatures between 8 and 26 °C, the maximum reaching 31 °C and the minimum 2 °C (Alvares et al. 2013; ICMBio 2015). The altitude varies from 630 m in the lowest areas to 2,892 m on Pico da Bandeira. The annual rainfall varies between 1,000 and 1,500 mm, with November, December, and January being the rainiest months, and June, July, and August the driest ones (ICMBio 2015). The park is inserted in the Atlantic Forest biome, with seasonal montane semideciduous forest vegetation in the western side of the park, montane rainforest and upper montane rainforest in the eastern side, and Campos de Altitude (high-elevation grassland) vegetation in both sides above 1,600 m (ICMBio 2015; Garbin et al. 2017).

Our fieldwork was conducted at three locations (Fig. 1, Table 1):

1) Alto Caparaó: situated in Minas Gerais, on the western slope of PARNA Caparaó; the Alto Caparaó entrance of the park is the one with the most visitors during the year. The altitude ranges from 1,250 to 2,892 m, with typical montane semideciduous forest vegetation and Campos de Altitude above 1,800 m.

2) Pedra Menina: in the southwestern portion of the park; the Pedra Menina entrance is in Espírito Santo and is the second most visited part of the park. The surveyed area, however, comprises both Minas Gerais and Espírito Santo. The altitude ranges from 1,400 to 2,892 m, with typical upper montane rainforest vegetation and Campos de Altitude above 1,900 m.

3) Santa Marta: in Espírito Santo, on the eastern slope of the park; the Santa Marta checkpoint has no entrance for visitors and is the least visited area among the three locations we sampled. It has the lowest altitudes of the locations we sampled, ranging from 900 to 1,200 m, and had typical montane rainforest vegetation.

Methods

Fieldwork. Data collections occurred only within the limits of PARNA Caparaó in two stages. The first stage occurred from 2012 to 2014, with 14 sampling campaigns of three days each, at the three selected areas of the park (SISBIO/ICMBio permission 23763-1; CEMAVE permission 3578/1; 3578/2). The second stage took place in five sampling campaigns of two days between 2014 and 2018 (SISBIO/ICMBio permissions 48868-1, 48868-2, 58587-1, 62651-1; CEMAVE permissions 3901/1; 4118/1), during the field ornithology course in Alto Caparaó. In total, 19 sampling campaigns were conducted in PARNA Caparaó.

The following methods were used during all visits to the park:

1) Point counts. We marked 10 points at least 200 m apart along a trail. All species seen and/or heard were

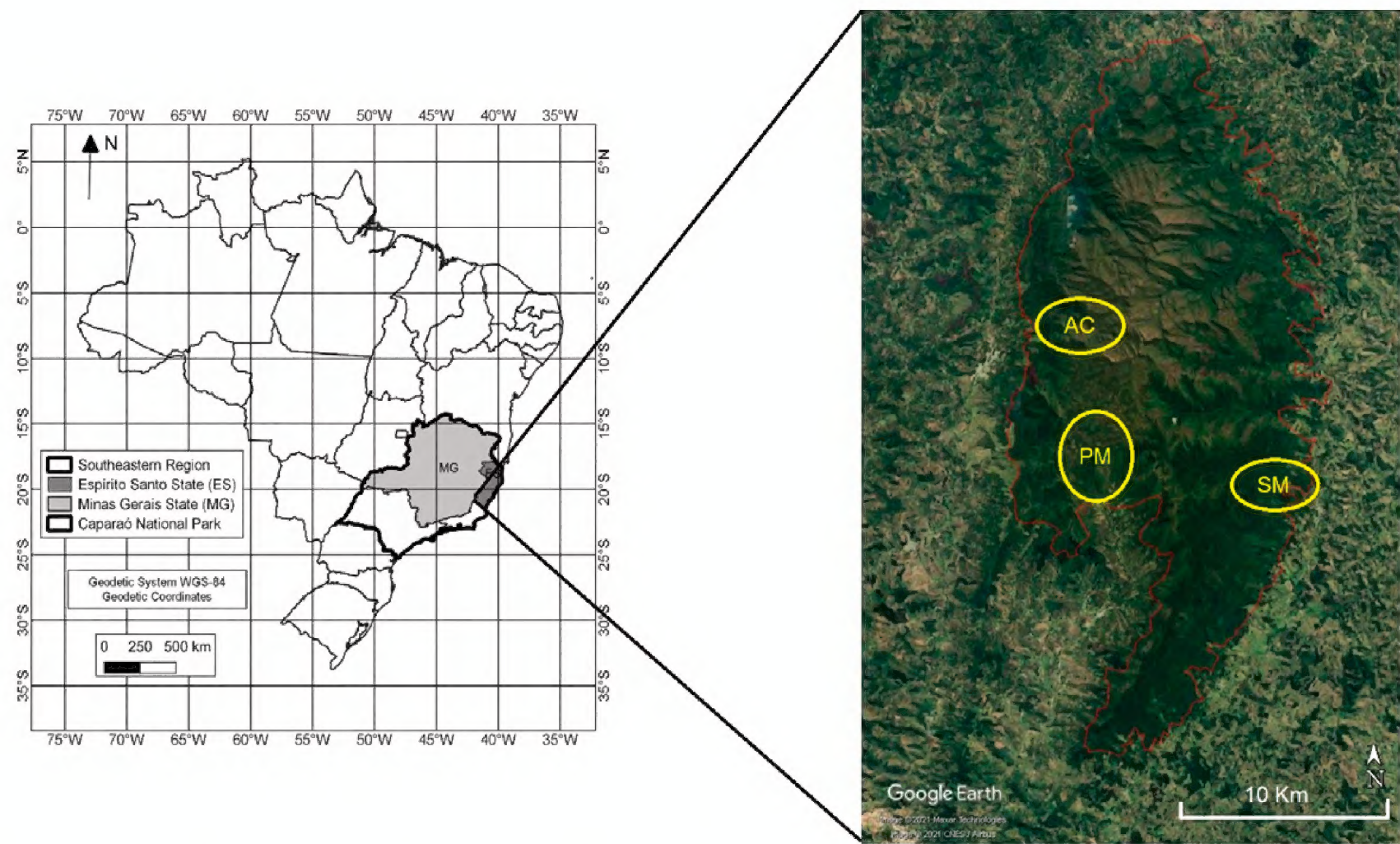


Figure 1. Brazil map with the location of PARNA Caparaó and areas sampled. Red lines are the Park’s limits. AC = Alto Caparaó; PM = Pedra Menina; SM = Santa Marta.

Table 1. Sites sampled within PARNA Caparaó, with the geographic coordinates and altitude gradient of each sampled area.

Sites	Geographic coordinates	Altitude gradient (m)
Alto Caparaó (AC)	20°29'0.5" to 20°30'02"S, 041°49'09" to 041°49'20"W	1256–1778
Pedra Menina (PM)	20°29'24" to 20°29'32"S, 041°44'06" to 041°44'47"W	1500–1895
Santa Marta (SM)	20°24'25" to 20°25'18"S, 041°50'27" to 041°51'02"W	900–1210

recorded in a 10-minute period at each point, to determine bird richness and abundance. This method was used only in the morning, on the first day of each visit, starting at 06:00 until the end of all points, totaling 31.6 hours.

2) Mist nets. We set up 6–10 nets, each 12 m long and 3 m high, during the morning (06:00–11:00) and the afternoon (15:00–18:00). This method was used on the second day of each visit, totaling 152 net-hours.

3) Qualitative survey. We included all bird species seen/heard while carrying out the methods described above and during the entire time we remained in the park, when we were not performing the point count and mist net methods. The qualitative surveys totaled 52 observation days.

We used Swarovski 8 × 20 and Bushnell 10 × 50 binoculars, and we referred to Erize et al. (2006) and Ridgely and Tudor (2009) for species’ identifications. For recording bird calls, we used a Sony ICD-PX240 digital recorder and Sennheiser ME66 microphone. The recordings were deposited in the Fonoteca Nacional Jacques Vielliard (FNJV) of Universidade Estadual de Campinas. We used a tablet with a database of vocalizations of several birds to assist in the confirmation of voices heard when we had doubt.

At Alto Caparaó, special mention should be made of the Vale Verde region, where we recorded some

interesting species. The waterfalls there form natural pools surrounded by riparian forest at altitudes of 1,400–1,500 m, and these attract many tourists. At Pedra Menina and Alto Caparaó, altitudes above 1,900 m were sampled in some visits during the qualitative survey, in which there was predominance of the Campos de Altitude vegetation.

Review. Here we also included secondary data based on our review of the literature, and these data were used to generate a standardized list for PARNA Caparaó (Appendix Table A1). Thus, we combine published results of Peixoto-Velho (1923), Bauer (1999), Sick (2001), Vasconcelos (2003), de Paula and Carvalho (2007), and data from the citizen-science online platforms WikiAves (2021) and Xeno-canto (2021), with data from museum collections, which are available at the online platforms Species Link (2021) and GBIF (2021). We did not include data from birdwatching databases (e.g., Ebird, available at GBIF) that did not include audiovisual material. For specimens deposited in the AMNH, we also consulted Resende and Vasconcelos (2017).

We decided not to include the complete list by Ruschi (1978) in the concatenated list. We included only the records confirmed by other sources, because there are criticisms about Ruschi’s erroneous and inconsistent records from Espírito Santo (Pacheco and Bauer 2001), including his list from PARNA Caparaó. There is a need

for further review of Ruschi’s records. However, we mention Ruschi’s list in our discussion of species.

As de Paula and Carvalho (2007) specified their localities, we did not include records from adjacent areas of the park. In the WikiAves (2021) and Xenocanto (2021) website, we searched for the term “Parque Nacional do Caparaó”, so that we could retrieve records obtained within the park without including those from adjacent areas. To search in Species Link (2021) and GBIF (2021), we used the terms “Caparaó”, “Serra do Caparaó”, “PARNA Caparaó”, and “Parque Nacional do Caparaó”. We used this review to discuss our results and to generate Appendix Table A1.

Scientific nomenclature and species taxonomic sequences followed the guidelines of the Brazilian Committee of Ornithological Records (CBRO) (Pacheco et al. 2021). Conservation status follows Copam (2010) for Minas Gerais, Chaves et al. (2019) for Espírito Santo, and ICMBIO (2018) for Brazil. Globally threatened species are cited in the text, following IUCN (2020). We followed Stotz et al. (1996) and Vale et al. (2018) in classifying endemic species, considering the species accepted by Pacheco et al. (2021). For species with “restricted distribution” we followed Bencke et al. (2006). The migratory species are based on Somenzari et al. (2018).

Data analysis. In our analysis of the data to determine if the number of samples was sufficient from PARNA Caparaó, a species accumulation curve was plotted in RStudio with the aid of the BiodiversityR (Kindt 2019) and vegan (Oksanen et al. 2019) packages. The frequency with which birds were recorded in the samplings was calculated by the frequency of occurrence (FO%) of the species according to the proposal of Vielliard and Silva (1990).

Results

Here we list 216 bird species for PARNA Caparaó. Of the species recorded, 17 (7%) are newly recorded from the park. We found 66 (31%) species that are endemic to the Atlantic Forest and 22 (10%) species classified as threatened in Espírito Santo (*n* = 20), Minas Gerais (*n* = 9), and Brazil (*n* = 3) (Table 2).

Of the endemic species recorded, 64 have a restricted distribution. We recorded 15 migratory species, separating them into “migratory” and “partially migratory”. Of these, three are migratory and 12 are partially migratory (Table 2).

Passeriformes was the most representative order (64% of total species), with the richest families being

Table 2. Birds recorded in Parque Nacional do Caparaó from 2012 to 2018. Conservation status: CR- Critically endangered, EN- Endangered, VU- Vulnerable. Endemic species (Endem.), Endemic species with restricted distribution (E.R.D.). Migratory status: M = Migratory, PM = Partially migratory. Occurrence frequency (F.O.%).

Family	Species	F.O. (%)	Voucher	Status			Endem.	E.R.D.
				ES	MG	BR		
Tinamidae Gray, 1839	<i>Crypturellus obsoletus</i> (Temminck, 1815)	94.7						
	<i>Crypturellus tataupa</i> (Temminck, 1815)	5.3						1
Cracidae Rafinesque, 1815	<i>Penelope superciliaris</i> Temminck, 1815	42.1						
	<i>Penelope obscura</i> Temminck, 1815	63.2						
Odontophoridae Gould, 1844	<i>Odontophorus capueira</i> (Spix, 1825)	5.3		EN	EN		1	
Columbidae Leach, 1820	<i>Patagioenas picazuro</i> (Temminck, 1813)	73.7						
	<i>Patagioenas cayennensis</i> (Bonnaterre, 1792)	15.8						
	<i>Patagioenas plumbea</i> (Vieillot, 1818)	47.4						
	<i>Leptotila verreauxi</i> Bonaparte, 1855	15.8						
	<i>Leptotila rufaxilla</i> (Richard & Bernard, 1792)	26.3						
	<i>Columbina talpacoti</i> (Temminck, 1810)	26.3						
	<i>Columbina squammata</i> (Lesson, 1831)	5.3						
Cuculidae Leach, 1820	<i>Tapera naevia</i> (Linnaeus, 1766)	5.3						
	<i>Piaya cayana</i> (Linnaeus, 1766)	63.2						
Caprimulgidae Vigors, 1825	<i>Nyctidromus albicollis</i> (Gmelin, 1789)	10.5						
	<i>Hydropsalis torquata</i> (Gmelin, 1789)	5.3						
Apodidae Olphe-Galliard, 1887	<i>Streptoprocne zonaris</i> (Shaw, 1796)	10.5						
	<i>Chaetura meridionalis</i> Hellmayr, 1907	5.3						
Trochilidae Vigors, 1825	<i>Phaethornis pretrei</i> (Lesson & Delattre, 1839)	21.1						
	<i>Phaethornis eurynome</i> (Lesson, 1832)	89.5					1	1

Family	Species	F.O. (%)	Voucher	Status			Endem.	E.R.D.
				ES	MG	BR		
Rallidae Rafinesque, 1815	<i>Colibri serrirostris</i> (Vieillot, 1816)	10.5						
	<i>Heliodoxa rubricauda</i> (Boddaert, 1783)	52.6					1	1
	<i>Heliomaster squamosus</i> (Temminck, 1823)	5.3						
	<i>Calliphlox amethystina</i> (Boddaert, 1783)	5.3						
	<i>Chlorostilbon lucidus</i> (Shaw, 1812)	21.1						
	<i>Stephanoxis lalandi</i> (Vieillot, 1818)	42.1	FNJV 50048	EN			1	1
	<i>Campylopterus largipennis</i> (Boddaert, 1783)	5.3						
	<i>Thalurania furcata</i> (Gmelin, 1788)	10.5						
	<i>Thalurania glaucopis</i> (Gmelin, 1788)	68.4					1	1
	<i>Aphantochroa cirrochloris</i> (Vieillot, 1818)	10.5					1	1
	<i>Chrysuronia versicolor</i> (Vieillot, 1818)	5.3						
	<i>Leucochloris albicollis</i> (Vieillot, 1818)	63.2	FNJV 50030				1	1
	<i>Chionomesa fimbriata</i> (Gmelin, 1788)	5.3						
	<i>Chionomesa lactea</i> (Lesson, 1832)	10.5						
Charadriidae Leach, 1820	<i>Aramides cajaneus</i> (Statius Müller, 1776)	47.4						
	<i>Aramides saracura</i> (Spix, 1825)	10.5					1	1
Cathartidae Lafresnaye, 1839								
	<i>Vanellus chilensis</i> (Molina, 1782)	10.5						
Accipitridae Vigors, 1824	<i>Coragyps atratus</i> (Bechstein, 1793)	73.7						
	<i>Cathartes aura</i> (Linnaeus, 1758)	21.1						
	<i>Cathartes burrovianus</i> Cassin, 1845	5.3						
	<i>Harpagus diodon</i> (Temminck, 1823)	5.3						
	<i>Ictinia plumbea</i> (Gmelin, 1788)	15.8						
Strigidae Leach, 1820	<i>Heterospizias meridionalis</i> (Latham, 1790)	10.5						
	<i>Rupornis magnirostris</i> (Gmelin, 1788)	10.5						
	<i>Geranoaetus albicaudatus</i> (Vieillot, 1816)	10.5						
	<i>Buteo albonotatus</i> Kaup, 1847	5.3						
Trogonidae Lesson, 1828	<i>Pulsatrix koeniswaldiana</i> (Bertoni & Bertoni, 1901)	10.5					1	1
	<i>Glaucidium brasilianum</i> (Gmelin, 1788)	5.3						
Momotidae Gray, 1840	<i>Trogon viridis</i> Linnaeus, 1766	52.6						
	<i>Trogon surrucura</i> Vieillot, 1817	21.1					1	1
	<i>Trogon rufus</i> Gmelin, 1788	31.6	FNJV 50054					
Alcedinidae Rafinesque, 1815	<i>Baryphthengus ruficapillus</i> (Vieillot, 1818)	5.3		EN			1	1
Bucconidae Horsfield, 1821	<i>Megaceryle torquata</i> (Linnaeus, 1766)	5.3						
Ramphastidae Vigors, 1825	<i>Nystalus chacuru</i> (Vieillot, 1816)	5.3						
	<i>Ramphastos dicolorus</i> Linnaeus, 1766	94.7	FNJV 50041				1	1
	<i>Pteroglossus bailloni</i> (Vieillot, 1819)	10.5			VU		1	1
Picidae Leach, 1820	<i>Pteroglossus aracari</i> (Linnaeus, 1758)	10.5						
	<i>Picumnus cirratus</i> Temminck, 1825	57.9						
	<i>Veniliornis maculifrons</i> (Spix, 1824)	10.5					1	1
	<i>Campephilus robustus</i> (Lichtenstein, 1818)	26.3					1	1
	<i>Dryocopus lineatus</i> (Linnaeus, 1766)	21.1						
	<i>Piculus polyzonus</i> (Valenciennes, 1826)	5.3				EN	1	
	<i>Piculus aurulentus</i> (Temminck, 1821)	42.1					1	1
Cariamidae Bonaparte, 1850	<i>Colaptes campestris</i> (Vieillot, 1818)	21.1						
Falconidae Leach, 1820	<i>Cariama cristata</i> (Linnaeus, 1766)	21.1						
	<i>Herpetotheres cachinnans</i> (Linnaeus, 1758)	15.8						
	<i>Micrastur ruficollis</i> (Vieillot, 1817)	10.5	FNJV 50031					
	<i>Micrastur semitorquatus</i> (Vieillot, 1817)	5.3						

Family	Species	F.O. (%)	Voucher	Status			Endem.	E.R.D.
				ES	MG	BR		
Psittacidae Rafinesque, 1815	<i>Caracara plancus</i> (Miller, 1777)	31.6						
	<i>Milvago chimachima</i> (Vieillot, 1816)	52.6						
	<i>Brotogeris tirica</i> (Gmelin, 1788)	57.9					1	1
	<i>Pionus maximiliani</i> (Kuhl, 1820)	73.7						
	<i>Amazona vinacea</i> (Kuhl, 1820)	36.8	FNJV 50016	EN	VU	VU	1	1
	<i>Amazona farinosa</i> (Boddaert, 1783)	5.3		EN	CR			
	<i>Pyrrhura frontalis</i> (Vieillot, 1817)	78.9					1	1
	<i>Primolius maracana</i> (Vieillot, 1816)	47.4						
Thamnophilidae Swainson, 1824	<i>Psittacara leucophthalmus</i> (Statius Müller, 1776)	5.3						
	<i>Rhopias gularis</i> (Spix, 1825)	15.8	FNJV 50042				1	1
	<i>Dysithamnus mentalis</i> (Temminck, 1823)	15.8						
	<i>Herpsilochmus rufimarginatus</i> (Temminck, 1822)	21.1						
	<i>Thamnophilus ruficapillus</i> Vieillot, 1816	21.1	FNJV 50052					
	<i>Thamnophilus caerulescens</i> Vieillot, 1816	78.9						
	<i>Taraba major</i> (Vieillot, 1816)	5.3						
	<i>Hypoedaleus guttatus</i> (Vieillot, 1816)	10.5		VU			1	1
	<i>Batara cinerea</i> (Vieillot, 1819)	21.1		VU				
	<i>Mackenziaena leachii</i> (Such, 1825)	63.2		EN			1	1
	<i>Mackenziaena severa</i> (Lichtenstein, 1823)	15.8					1	1
	<i>Pyriglena leucoptera</i> (Vieillot, 1818)	78.9					1	1
	<i>Drymophila ferruginea</i> (Temminck, 1822)	26.3	FNJV 50023				1	1
	<i>Drymophila genei</i> (Filippi, 1847)	73.7	FNJV 50024, 50025, 50026	EN	VU		1	1
	<i>Drymophila ochropyga</i> (Hellmayr, 1906)	52.6	FNJV 50027				1	1
Conopophagidae Sclater & Salvin, 1873								
	<i>Conopophaga melanops</i> (Vieillot, 1818)	5.3					1	1
Grallariidae Sclater & Salvin, 1873	<i>Conopophaga lineata</i> (Wied, 1831)	84.2	FNJV 50021				1	1
	<i>Grallaria varia</i> (Boddaert, 1783)	15.8		EN	CR	VU		
Rhinocryptidae Wetmore, 1926 (1837)								
	<i>Eleoscytalopus indigoticus</i> (Wied, 1831)	5.3		EN			1	1
Formicariidae Gray, 1840	<i>Scytalopus speluncae</i> (Ménétrières, 1835)	57.9	FNJV 50044	EN			1	1
	<i>Chamaeza campanisona</i> (Lichtenstein, 1823)	10.5		EN				
Dendrocolaptidae Gray, 1840	<i>Chamaeza meruloides</i> Vigors, 1825	100	FNJV 50018				1	1
	<i>Sittasomus griseicapillus</i> (Vieillot, 1818)	100						
	<i>Dendrocincla turdina</i> (Lichtenstein, 1820)	31.6					1	1
	<i>Dendrocolaptes platyrostris</i> Spix, 1825	52.6						
	<i>Xiphocolaptes albicollis</i> (Vieillot, 1818)	52.6						
	<i>Xiphorhynchus fuscus</i> (Vieillot, 1818)	78.9					1	1
	<i>Campylorhamphus falcularius</i> (Vieillot, 1822)	10.5					1	1
	<i>Lepidocolaptes squamatus</i> (Lichtenstein, 1822)	36.8					1	1
Xenopidae Bonaparte, 1854								
	<i>Xenops minutus</i> (Sparrman, 1788)	5.3						
Furnariidae Gray, 1840	<i>Xenops rutilans</i> Temminck, 1821	10.5						
	<i>Furnarius rufus</i> (Gmelin, 1788)	21.1						
	<i>Lochmias nematura</i> (Lichtenstein, 1823)	94.7						
	<i>Anabazenops fuscus</i> (Vieillot, 1816)	52.6					1	1
	<i>Cichlocolaptes leucophrus</i> (Jardine & Selby, 1830)	10.5		EN	EN		1	1
	<i>Anabacerthia lichtensteini</i> (Cabanis & Heine, 1859)	26.3					1	1
	<i>Dendroma rufa</i> (Vieillot, 1818)	10.5	FNJV 50033					
	<i>Syndactyla rufosuperciliata</i> (Lafresnaye, 1832)	10.5	FNJV 50050					
	<i>Phacellodomus rufifrons</i> (Wied, 1821)	15.8						
	<i>Asthenes moreirae</i> (Miranda-Ribeiro, 1906)	10.5		CR			1	1
	<i>Cranioleuca pallida</i> (Wied, 1831)	26.3	FNJV 50022				1	1

Family	Species	F.O. (%)	Voucher	Status			Endem.	E.R.D.
				ES	MG	BR		
Pipridae Rafinesque, 1815	<i>Synallaxis cinerascens</i> Temminck, 1823	21.1						
	<i>Synallaxis ruficapilla</i> Vieillot, 1819	78.9	FNJV 50049				1	1
	<i>Synallaxis spixi</i> Sclater, 1856	73.7						
Cotingidae Bonaparte, 1849	<i>Ilicura militaris</i> (Shaw & Nodder, 1809)	57.9	FNJV 50019, 50020				1	1
	<i>Chiroxiphia caudata</i> (Shaw & Nodder, 1793)	94.7					1	1
Tityridae Gray, 1840	<i>Carpornis cucullata</i> (Swainson, 1821)	21.1		VU	EN		1	1
	<i>Procnias nudicollis</i> (Vieillot, 1817)	21.1	FNJV 50039, 50040	VU	EN		1	1
Onychorhynchidae Tello, Moyle, Marchese & Cracraft, 2009	<i>Schiffornis virescens</i> (Lafresnaye, 1838)	21.1					1	1
	<i>Pachyramphus viridis</i> (Vieillot, 1816)	5.3						
	<i>Pachyramphus castaneus</i> (Jardine & Selby, 1827)	10.5						
	<i>Pachyramphus polychopterus</i> (Vieillot, 1818)	15.8						
Platyrinchidae Bonaparte, 1854	<i>Myiobius atricaudus</i> Lawrence, 1863	5.3						
Rhynchocyclidae Berlepsch, 1907	<i>Platyrinchus mystaceus</i> Vieillot, 1818	94.7	FNJV 50034, 50035					
	<i>Mionectes rufiventris</i> Cabanis, 1846	78.9					1	1
	<i>Leptopogon amaurocephalus</i> Tschudi, 1846	36.8						
Tyrannidae Vigors, 1825	<i>Phylloscartes ventralis</i> (Temminck, 1824)	21.1						
	<i>Tolmomyias sulphurescens</i> (Spix, 1825)	84.2	FNJV 50053					
	<i>Tolmomyias poliocephalus</i> (Taczanowski, 1884)	10.5						
	<i>Todirostrum poliocephalum</i> (Wied, 1831)	26.3					1	1
	<i>Todirostrum cinereum</i> (Linnaeus, 1766)	5.3						
	<i>Poecilotriccus plumbeiceps</i> (Lafresnaye, 1846)	73.7	FNJV 50036					
	<i>Hemitriccus diops</i> (Temminck, 1822)	21.1					1	1
	<i>Hirundinea ferruginea</i> (Gmelin, 1788)	31.6						
	<i>Tyranniscus burmeisteri</i> (Cabanis & Heine, 1859)	10.5						
Vireonidae Swainson, 1837	<i>Camptostoma obsoletum</i> (Temminck, 1824)	78.9						
	<i>Elaenia flavogaster</i> (Thunberg, 1822)	26.3						
	<i>Elaenia obscura</i> (d'Orbigny & Lafresnaye, 1837)	21.1						
	<i>Myiopagis caniceps</i> (Swainson, 1835)	5.3						
	<i>Capsiempis flaveola</i> (Lichtenstein, 1823)	21.1						
	<i>Phyllomyias virescens</i> (Temminck, 1824)	10.5					1	1
	<i>Serpophaga subcristata</i> (Vieillot, 1817)	10.5						
	<i>Attila rufus</i> (Vieillot, 1819)	36.8	FNJV 50017				1	1
	<i>Legatus leucophaeus</i> (Vieillot, 1818)	5.3						
	<i>Myiarchus ferox</i> (Gmelin, 1789)	36.8						
	<i>Myiarchus tyrannulus</i> (Statius Müller, 1776)	5.3						
	<i>Sirystes sibilator</i> (Vieillot, 1818)	47.4						
	<i>Pitangus sulphuratus</i> (Linnaeus, 1766)	52.6						
	<i>Myiodynastes maculatus</i> (Statius Müller, 1776)	15.8						
	<i>Megarynychus pitangua</i> (Linnaeus, 1766)	26.3						
	<i>Myiozetetes similis</i> (Spix, 1825)	26.3						
	<i>Tyrannus melancholicus</i> Vieillot, 1819	42.1						
	<i>Empidonomus varius</i> (Vieillot, 1818)	5.3						
	<i>Colonia colonus</i> (Vieillot, 1818)	36.8						
	<i>Fluvicola nengeta</i> (Linnaeus, 1766)	21.1						
	<i>Muscipipra vetula</i> (Lichtenstein, 1823)	31.6					1	1
	<i>Myiophobus fasciatus</i> (Statius Müller, 1776)	42.1						
	<i>Cnemotriccus fuscatus</i> (Wied, 1831)	21.1						
	<i>Lathrotriccus euleri</i> (Cabanis, 1868)	47.4	FNJV 50029					
	<i>Knipolegus lophotes</i> Boie, 1828	5.3						
	<i>Knipolegus nigerrimus</i> (Vieillot, 1818)	52.6					1	1
	<i>Knipolegus cyanirostris</i> (Vieillot, 1818)	52.6						
	<i>Cyclarhis gujanensis</i> (Gmelin, 1789)	100						
	<i>Hylophilus poicilotis</i> Temminck, 1822	78.9					1	1

Family	Species	F.O. (%)	Voucher	Status			Endem.	E.R.D.
				ES	MG	BR		
Hirundinidae Rafinesque, 1815	<i>Pygochelidon cyanoleuca</i> (Vieillot, 1817)	57.9						
	<i>Progne chalybea</i> (Gmelin, 1789)	10.5						
	<i>Troglodytes musculus</i> Naumann, 1823	73.7						
Turdidae Rafinesque, 1815	<i>Turdus flavipes</i> Vieillot, 1818	36.8	FNJV 50055					
	<i>Turdus leucomelas</i> Vieillot, 1818	84.2						
	<i>Turdus rufiventris</i> Vieillot, 1818	100						
	<i>Turdus amaurochalinus</i> Cabanis, 1850	36.8						
	<i>Turdus subalaris</i> (Seebohm, 1887)	10.5					1	1
	<i>Turdus albicollis</i> Vieillot, 1818	31.6						
Mimidae Bonaparte, 1853	<i>Mimus saturninus</i> (Lichtenstein, 1823)	15.8	FNJV 50032					
Fringillidae Leach, 1820	<i>Euphonia chlorotica</i> (Linnaeus, 1766)	5.3						
Passerellidae Cabanis & Heine, 1850	<i>Ammodramus humeralis</i> (Bosc, 1792)	5.3						
	<i>Arremon taciturnus</i> (Hermann, 1783)	5.3						
	<i>Zonotrichia capensis</i> (Statius Müller, 1776)	100	FNJV 50056, 50057					
Icteridae Vigors, 1825	<i>Cacicus haemorrhous</i> (Linnaeus, 1766)	5.3						
	<i>Molothrus bonariensis</i> (Gmelin, 1789)	10.5						
	<i>Gnorimopsar chopi</i> (Vieillot, 1819)	10.5						
Parulidae Wetmore, Friedmann, Lincoln, Miller, Peters, van Rossem, Van Tyne & Zimmer 1947	<i>Basileuterus culicivorus</i> (Deppe, 1830)	94.7						
Cardinalidae Ridgway, 1901	<i>Piranga flava</i> (Vieillot, 1822)	5.3						
	<i>Habia rubica</i> (Vieillot, 1817)	5.3						
Thraupidae Cabanis, 1847	<i>Orchesticus abeillei</i> (Lesson, 1839)	10.5					1	1
	<i>Hemithraupis ruficapilla</i> (Vieillot, 1818)	94.7	FNJV 50028				1	1
	<i>Dacnis cayana</i> (Linnaeus, 1766)	47.5						
	<i>Saltator similis</i> d'Orbigny & Lafresnaye, 1837	73.7	FNJV 50043	VU				
	<i>Coereba flaveola</i> (Linnaeus, 1758)	36.8						
	<i>Volatinia jacarina</i> (Linnaeus, 1766)	5.3						
	<i>Trichothraupis melanops</i> (Vieillot, 1818)	84.2						
	<i>Coryphospingus pileatus</i> (Wied, 1821)	5.3						
	<i>Tachyphonus coronatus</i> (Vieillot, 1822)	89.5					1	1
	<i>Sporophila nigricollis</i> (Vieillot, 1823)	5.3						
	<i>Sporophila caeruleescens</i> (Vieillot, 1823)	36.8	FNJV 50045					
	<i>Thlypopsis sordida</i> (d'Orbigny & Lafresnaye, 1837)	5.3						
	<i>Microspingus lateralis</i> (Nordmann, 1835)	73.7	FNJV 50037, 50038	VU			1	
	<i>Sicalis flaveola</i> (Linnaeus, 1766)	21.1						
	<i>Haplospiza unicolor</i> Cabanis, 1851	10.5					1	1
	<i>Pipraeidea melanonota</i> (Vieillot, 1819)	5.3						
	<i>Stephanophorus diadematus</i> (Temminck, 1823)	52.6	FNJV 50046, 50047	VU				
	<i>Cissopis leverianus</i> (Gmelin, 1788)	10.5						
	<i>Schistochlamys ruficapillus</i> (Vieillot, 1817)	26.3						
	<i>Thraupis sayaca</i> (Linnaeus, 1766)	63.2						
	<i>Thraupis cyanoptera</i> (Vieillot, 1817)	5.3					1	1
	<i>Thraupis palmarum</i> (Wied, 1821)	21.1						
	<i>Thraupis ornata</i> (Sparrman, 1789)	78.9					1	1
	<i>Stilpinia cayana</i> (Linnaeus, 1766)	78.9						
	<i>Tangara cyanoventris</i> (Vieillot, 1819)	94.7					1	1
	<i>Tangara desmaresti</i> (Vieillot, 1819)	73.7	FNJV 50051				1	1

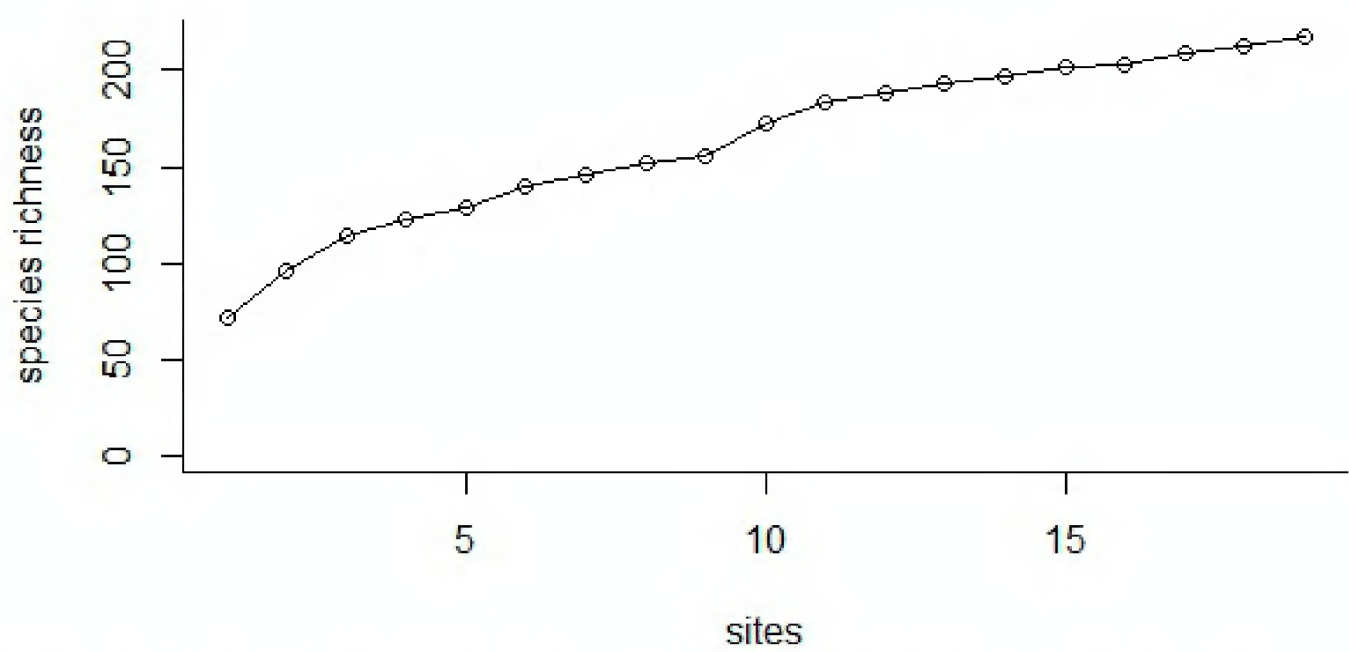


Figure 2. Species accumulation curve of bird species in PARNA Caparaó, Atlantic Forest, southeastern Brazil.

Tyrannidae ($n = 29$) and Thraupidae ($n = 26$). Trochilidae ($n = 16$) was the richest family among the non-Passerines. The species accumulation curve (Fig. 2) did not stabilize, showing that more survey work is needed to have a more complete list of the park’s avifauna.

The species with occurrence frequency above 50% total 61, of which 13 species were recorded in practically all visits (with 94.7% and 100% FO): *Crypturellus obsoletus*, *Ramphastos dicolorus*, *Lochmias nematura*, *Chamaeza meruloides*, *Sittasomus griseicapillus*, *Chiroxiphia caudata*, *Platyrinchus mystaceus*, *Cyclarhis gujanensis*, *Turdus rufiventris*, *Zonotrichia capensis*, *Basileuterus culicivorus*, *Tangara cyanoventris*, and *Hemitraupis ruficapilla*. Most species were recorded only a few times in the park (Table 3).

Annotated list. Our list contains species that are newly recorded from the PARNA Caparaó and some other species we found that deserve comment. We did not collect any specimens and most species were heard but not seen, which made it difficult or impossible to identify the sex. We made available all information we could acquire in the field. Whenever relevant, we highlighted the status of endemism and threat level faced by the bird species commented.

Species newly recorded from Caparao National Park

Tinamiformes, Tinamidae

Crypturellus tataupa (Temminck, 1815)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; vocalizing, 1,400–1,500 m; 09.VI.2018; obs.; 1 specimen, sex indet.

Table 3. Occurrence frequency of the species recorded in PARNA Caparaó, Brazil.

Occurrence frequency	Number of species
Frequency of 75% ≤ x ≤ 100%	29
Frequency of 50% ≤ x < 75%	32
Frequency of 25% ≤ x < 50%	38
Frequency of 1% ≤ x < 25%	117

This species was less common (FO = 5.3%) than its congener *C. obsoletus* (FO = 94.7%), both recorded in the park.

Identification. This species was detected by its voice, which is a series of loud whistles that rise then descend in pitch and volume, accelerating towards the end (Erize et al. 2006).

Apodiformes, Trochilidae

Campylopterus largipennis (Boddaert, 1783)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'22"S, 041°50'28"W; recorded along Jipe trail (trilha do Jipe), 1,700–1,800 m; 28.X.2013; obs.; 1 specimen, sex indet.

Currently, the eastern most distribution of this species in Brazil consists of isolated populations in Cadeia do Espinhaço, Minas Gerais (Sick 2001; Züchner et al. 2020). There is an alleged historical record of this species, collected by Natterer, in the state of São Paulo (von Pelzeln 1871; Paynter and Traylor 1991). Our new record of this species from the park should be better investigated. Additional studies on the distribution of this species are needed.

Identification. This species is similar to the female of *Thaluranian glaucopsis*, but *C. largipennis* is larger, with a larger bill, gray rather than white underparts, and with an accentuated white post-ocular spot.

Thaluranian furcata (Gmelin, 1788)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'21"S, 041°50'54"W; 1,602 m; 15.XII.2012; obs.; 1 ♂ • same locality; 20°24'25"S, 041°50'51"W; 1,657 m; 06.VI.2014; obs.; 1 ♂.

This species has an extremely large geographic range in Brazil, with its southern limits in Serra do Brigadeiro, Minas Gerais. However, the range include Espírito Santo while the species is migrating (Sick 2001), and a vagrant individual was recorded by Oniki (1996) in northern Espírito Santo. *Thaluranian furcata* was recently recorded in Manhuaçu, Minas Gerais (Mendes et al. 2017), which is part of the Caparaó complex.

Identification. A male individual was observed on two



Figure 3. Birds recorded in PARNA Caparaó. **A.** *Basileuterus culicivorus*. **B.** *Campephilus robustus* (male). **C.** *Campiloramphus trochilirostris*. **D.** *Chamaeza meruloides*. **E.** *Chiroxiphia caudata* (male). **F.** *Colonia colonus* (male). **G.** *Clytolaema rubricauda* (female). **H.** *Conopophaga lineata* (male). **I.** *Dendrocolaptes platyrostris*. **J.** *Glaucidium brasilianus*. **K.** *Haplospiza unicolor* (male). **L.** *Harpagus diodon*.

occasions, distinguished by its brilliant green throat and purple-blue underparts (Erize et al. 2006).

***Helimaster squamosus* (Temminck, 1823)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'34"S, 041°50'56"W; 1,555 m; 09.VI.2018; obs.; 1 ♂.

Identification. A male individual was observed, identified by its dark, bronzy-green body, with shiny blue cap and a purple-red throat (Erize et al. 2006).

Cathartiformes, Cathartidae

***Cathartes burrovianus* Cassin, 1845**

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'0.5"S, 041°49'37"W; 1,283 m; 20.IX.2013; obs.; 1 specimen, sex indet.

Identification. Recorded once, during overflight. This species is easily distinguished by its yellowish, bare head (Erize et al. 2006).

Accipitriformes, Accipitridae

***Buteo albonotatus* Kaup, 1847**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'17"S, 041°51'07"W; 1,236 m; 09.VI.2018; obs.; 1 specimen, sex indet.

Identification. An individual was observed flying over the park, identified by its all-black body, with two white bands on the tail (Erize et al. 2006).

Strigiformes, Strigidae

***Glaucidium brasilianum* (Gmelin, 1788)**

Figure 3J

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'12"S, 041°51'06"W; 1,267 m; 09.VI.2018; obs.; 1 specimen, sex indet.

Identification. This species was identified by its voice, which consists of a long series of short whistles (Erize et al. 2006).

Coraciiformes, Momotidae

***Baryphthengus ruficapillus* (Vieillot, 1818)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'10"S, 041°50'36"W; 1,400 m; 29.VI.2013; obs.; 1 specimen, sex indet.

Baryphthengus ruficapillus is relatively common, occurring in several protected areas (Ridgely et al. 2015; Snow and Kirwan 2020), but we had only one encounter with it. This species is Endangered in Espírito Santo, and although our record was in Minas Gerais, the park comprises a forested area in both states.

Identification. It was observed during sunrise, perched on a signboard in Vale Verde, near the Caparaó River. It is a medium-sized bird, which is easily identified by its dark face-mask, rufous cap, and cinnamon-rufous ventral band (Erize et al. 2006).

Piciformes, Picidae

***Piculus polyzonus* (Valenciennes, 1826)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; along Jipe trail (trilha do Jipe), 1,470 m; 06.VI.2014; obs.; 1 ♂.

This Atlantic Forest endemic species is Endangered in Brazil (ICMBio 2018). This species was considered conspecific with *P. chrysochloros* until recently. Its distribution is poorly known, as there are only a few field records, mostly from preserved forests in conservation units (Del-Rio et al. 2013; ICMBio 2018). A record of this species was reported by de Paula and Carvalho (2007) in the adjacent areas of the park. Our record confirms the occurrence of this species within the park.

Identification. The upperparts are olive, the underparts yellow-barred olive, and the cap and malar are red. This species is similar to *P. aurulentus*, which also occurs in the park. However, *P. polyzonus* was identified by having only one yellow line on its face (Sick 2001; Erize et al. 2006).

Passeriformes, Thamnophilidae

***Herpsilochmus rufimarginatus* (Temminck, 1822)**

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'19"S, 041°49'16"W; 1,697 m; 13.V.2013; obs.; 1 specimen, sex indet. • same locality; 14.01.2014; obs.; 1 specimen, sex indet.

Identification. Identified by its voice, a fast, descending, accelerating series of gravelly nasal notes (Ridgely and Tudor 2009).

Rhinocryptidae

***Eleoscytalopus indigoticus* (Wied, 1831)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'31"S, 041°50'37"W; 1,704 m; 12.XII.2012; 2 specimens, sex indet. • same locality; 20°24'30"S, 041°50'56"W; 1,551 m; 04.VI.2017; obs.; 1 specimen, sex indet.

Recorded in an ecotone between montane semideciduous forest and Campos de Altitude vegetation. This species is endemic to the Atlantic Forest (Vale et al. 2018) and is Endangered in Espírito Santo and Near Threatened globally (IUCN 2020). It was recorded in sympatry with *Scytalopus speluncae* at 1,600–1,800 m.

Identification. This species was identified by its call, a strong froglike and guttural ascending trill (Sick 2001; Ridgely and Tudor 2009).

Xenopidae

***Xenops minutus* (Sparrman, 1788)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'55"S, 041°50'59"W; 1,400 m; 16.X.2012; obs.; 1 specimen, sex indet.

Identification. This species was identified by its

olive-brown body, pale buff superciliary, white malar stripe, and strongly upturned lower mandible. *Xenops minutus* is less streaked than *X. rutilans* (Ridgely and Tudor 2009), which also occurs in the park.

Rhynchocyclidae

***Tolmomyias poliocephalus* (Taczanowski, 1884)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'09"S, 41°50'52"W; 1,314 m; 11.V.2015; obs.; 1 specimen, sex indet.

Identification. This species is very similar to *T. sulphureus*, which is fairly common in the park. *Tolmomyias poliocephalus* can be distinguished by being slightly smaller and lacking the dark patch on ear-coverts (Ridgely and Tudor 2009). The vocalization was compared with our song database.

Tyrannidae

***Legatus leucophaeus* (Vieillot, 1818)**

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'39"S, 041°44'12"W; 1,113 m; 19.IX.2012; obs.; 1 specimen, sex indet.

Identification. This species was observed and heard. It was identified by its small size, stubby black bill, semi-concealed yellow coronal patch, blackish face with long whitish superciliary, whitish malar area, dusky-brown streaked breast, and pale-yellow belly. Vocalization consists of a short series of strident shrills, repeated tirelessly (Sick 2021; Ridgely and Tudor 2009).

***Myiarchus tyrannulus* (Statius Müller, 1776)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'56"S, 041°50'59"W; 1,396 m; 09.VI.2018; obs.; 1 specimen, sex indet.

Identification. This species was identified by its vocalization, which is a rushed, rhythmic verse with the last note lower (Sick 2001).

***Cnemotriccus fuscatus* (Wied, 1831)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'17"S, 41°51'07"W; 1,256 m; 11.V.2015; obs.; 1 specimen, sex indet. - Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'24"S, 41°44'29"W; 1,139 m; 19.VIII.2012; obs.; 1 specimen, sex indet. • same locality; 20°29'30"S, 41°44'11"W; 1,041 m; 19.IX.2012, obs.; 1 specimen, sex indet. • same locality; 20°29'27"S, 41°44'16"W; 1,063 m; 21.IV.2013; obs.; 1 specimen, sex indet.

Identification. This species was identified by its voice, mostly a series of fast, gravelly, and scratchy notes or a more piercing call at long intervals (Ridgely and Tudor 2009).



Figure 4. Birds recorded in PARNA Caparaó. **A.** *Hemitriccus diops*. **B.** *Herpethotes cachinnans*. **C.** *Hilophilus poicilotis*. **D.** *Hirundinea ferruginea*. **E.** *Illicura militaris* (male). **F.** *Knipolegus nigerrimus* (female). **G.** *Muscipira vetula*. **H.** *Leptopogon amaurocephalus*. **I.** *Knipolegus cyanirostris* (male). **J.** *Lepdocolaptes squamatus*. **K.** *Lochmias nematura*. **L.** *Mionectes rufiventris*.

Passerellidae

Arremon taciturnus (Hermann, 1783)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'03"S, 41°51'06"W; 1,338 m; 06.VI.2014; obs.; 1 ♂.

Identification. A male individual was observed and identified by its all-black bill, black head with grey coronal streak, white superciliary, and a black pectoral collar. It resembles *A. semitorquatus* which also occurs in the park, but differs from *A. taciturnus* by having a yellow lower mandible and an incomplete pectoral collar in males (Ridgely and Tudor 2009; Ridgely et al. 2015).

Threatened and noteworthy species

Galliformes, Odontophoridae

Odontophorus capueira (Spix, 1825)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'17"S, 041°51'07"W; 04.VI.2017; obs.; 1 specimen, sex indet.

This Atlantic Forest endemic species is Endangered in both Minas Gerais and Espírito Santo. *Odontophorus capueira* has a wide distributional range, but populations are currently much reduced due to deforestation and hunting, and this species is now mainly restricted to protected areas of coastal Atlantic Forest fragments (Sick 2001; Ridgely et al. 2015; Carroll and Kirwan 2019). Pairs sing in duet during the mating season (Sick 2001).

Identification. This species was identified by its

vocalization, a vigorous sequence of disyllabic “uru-uru-uru-uru” which can last for a few minutes (Sick 2001; Ridgely et al. 2015).

Caprimulgiformes, Caprimulgidae

Hydropsalis torquata (Gmelin, 1789)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'32"S, 041°49'18"W; 08.V.2014; obs.; 1 ♂.

Identification. This species has a long tail which is almost twice the length of its body and a rufous nuchal collar (Erize et al. 2006).

Apodiformes, Apodidae

Chaetura meridionalis Hellmayr, 1907

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'30"S, 041°44'11"W; 23.XI.2013; obs.; 1 specimen, sex indet.

Identification. Tail short and square with short barbs protruding. Body dark, smoky brown with pale smoky grey rump and tail coverts contrasting. Throat dirty whitish (Erize et al. 2006).

Apodiformes, Trochilidae

Chrysuronia versicolor (Vieillot, 1818)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'27"S, 041°44'16"W; 19.IX.2012; obs.; 1 specimen, sex indet.

There is a specimen collected in the Caparaó National



Figure 5. Birds recorded in PARNA Caparaó. **A.** *Platyrrhynchus mystaceus*. **B.** *Pyriglena leucoptera* (male). **C.** *Ramphastus dicolorus*. **D.** *Piaya cayana*. **E.** *Rhopila gularis* (male) **F.** *Penelope obscura*. **G.** *Microspingus lateralis*. **H.** *Pionus maximiliani*. **I.** *Picumnus cirratus* (male). **J.** *Schistoclamys ruficapillus*. **K.** *Piculus aurulentus* (female). **L.** *Saltator similis*.

Park at the National Museum (MNRJ 48473), without collection date information.

Identification. Upperparts bronzy green. Tail brownish bronzy olive with a dark brown subterminal band. White belly and bib white, speckled with emerald green. Bill with a rosy mandible (Erize et al. 2006; Ridgely et al. 2015).

Chionomesa fimbriata (Gmelin, 1788)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'25"S, 041°44'21"W; 04.VIII.2012; obs.; 1 ♂.

Identification. Body brilliant green with a shiny, emerald-green bib. Belly and undertail coverts white. Bill red (Erize et al. 2006).

Chionomesa lactea (Lesson, 1832)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'54"S, 041°49'11"W; 1,528 m; 20.IX.2013; obs.; 1 specimen, sex indet. • Santa Marta; 23.XI.2013; obs.; 1 specimen, sex indet.

There is a specimen collected in 1929 by Kaempfer at “Fazendinha” at 1,660 m in the Caparaó Mountains (AMNH 316601). Since then, there were no other records of this species in the park until now, more than 80 years later.

Identification. Upperparts brilliant dark green with a bronzy sheen. Belly dark green, with central white strip. Bib brilliant violet-blue. Bill with a reddish mandible (Sick 2001; Erize et al. 2006; Ridgely et al. 2015).

Calliphlox amethystina (Boddaert, 1783)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; 19.VI.2014; obs.; 1 ♀.

Identification. Tail forked, with outer pairs pointed. Bib shiny purple-red. Collar white. Females have a buff throat, spotted with green, and green and buff collars, with cinnamon rufous underparts (Erize et al. 2006).

Accipitriformes, Accipitridae

Harpagus diodon (Temminck, 1823)

Figure 3L

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'31"S, 041°44'06"W; 15.II.2014; obs.; 1 specimen, sex indet.

Identification. Head blackish and throat white with a blackish midline. Upperparts grayish black and underparts pale grey. Tail with four blackish bars. Underwings and thighs chestnut rufous (Erize et al. 2006).

Galbuliformes, Bucconidae

Nystalus chacuru (Vieillot, 1816)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°29'25"S, 041°44'21"W; 15.XII.2012; obs.; 1 specimen, sex indet.

This species is very common and widespread (Ridgely et al. 2015; WikiAves 2021), but records from systematic surveys in Espírito Santo are scarce. Although our record was in Minas Gerais, the park comprises a forested area in both states.

Identification. Bill large, robust, and bright orange-red. Face black and auricular white. Underparts buffy whitish and upperparts brownish rufous.

Piciformes, Rhamphastidae

***Pteroglossus bailloni* (Vieillot, 1819)**

Observations. BRAZIL – **Minas Gerais** • Alto Caparaó, PARNA Caparaó (Vale Verde); 20°25'08"S, 041°50'52"W; 1,400 m; 12.V.2012; obs.; a group of individuals. – **Espírito Santo** • Santa Marta, PARNA Caparaó; 1,111 m; 19.XI.2012; obs.; 1 specimen, sex indet.

This Atlantic Forest endemic species is Vulnerable in Minas Gerais and globally.

Identification. This species is easily distinguished by its yellowish body, greenish-yellow bill with chestnut-red base and a pinkish-orange bare skin around the eye (Sick 2001; Erize et al. 2006).

Piciformes, Picidae

***Piculus aurulentus* (Temminck, 1821)**

Figure 5

Observations. BRAZIL – **Espírito Santo** • Pedra Menina, PARNA Caparaó; 20°29'25"S, 041°49'17"W; 1,600–1,700 m; 26.X.2012; obs.; 1 ♂ • same locality; 20.IX.2013; obs.; 1 ♂ • same locality; 25.I.2014; obs.; 1 ♂. – **Minas Gerais** • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; 1,450 m; 15.XII.2012; obs.; 1 ♂ • same locality; 28.X.2013; obs.; 1 ♂ • same locality; 20°24'31"S, 041°50'37"W; 1,700 m; 08.III.2014; obs.; 1 ♂ • same locality; 11.05.2015; obs.; 1 ♂ and 1 ♀.

Identification. Forehead, crown, and malar streak red. Face with two yellow lines, distinguishing it from *P. polyzonus* (Erize et al. 2006).

Falconiformes, Falconidae

***Micrastur semitorquatus* (Vieillot, 1817)**

Observations. BRAZIL – **Espírito Santo** • Pedra Menina, PARNA Caparaó; 20°29'27"S, 041°49'18"W; 25.I.2014; obs.; 1 specimen, sex indet.

Identification. Cap hind-cheek, upperparts, and wings black. Rest of cheek, collar, and underparts white, rufous or black. Tail with three white bands and tip white. The voice is a lengthening series of “cows” after a stuttering start (Erize et al. 2006).

Psittaciformes, Psittacidae

***Primolius maracana* (Vieillot, 1816)**

Observations. BRAZIL – **Espírito Santo** • Pedra Menina, PARNA Caparaó; 20°29'54"S, 041°49'11"W; 26.X.2012; obs.; 2 specimens, sex indet. • same locality; 26.V.2013; obs.; 2 specimens, sex indet. • same locality; 19.VI.2014; obs.; 2 specimens, sex indet. – **Minas Gerais** • Alto Caparaó, PARNA Caparaó; 20°25'09"S, 041°50'46"W; 29.VI.2013; obs.; 3 specimens, sex indet. •

same locality; 08.III.2014; obs.; 2 specimens, sex indet. • same locality; 11.V.2015; obs.; 2 specimens, sex indet. • same locality; 17.VI.2016; obs.; 2 specimens, sex indet. • same locality; 04.VI.2017; obs.; 2 specimens, sex indet. • same locality; 09.VI.2018; obs.; 2 specimens, sex indet.

Identification. Face barem creamy white, forehead orange-red and blackish blue, and crown and part of the cheek bluish (Erize et al. 2006).

***Amazona vinacea* (Kuhl, 1820)**

Observations. BRAZIL – **Minas Gerais** • Alto Caparaó, PARNA Caparaó; 20°25'03"S, 041°51'06"W; 29.VI.2013; obs.; group of individuals, sex indet. • same locality; 28.X.2013; obs.; 2 specimens, sex indet. • same locality; 06.VI.2014; obs.; group of individuals, sex indet. • same locality; 11.V.2015; obs.; group of individuals, sex indet. • same locality; 04.VI.2017; obs.; 2 specimens, sex indet. • same locality; 09.VI.2018; obs.; 2 specimens, sex indet. – **Espírito Santo** • Pedra Menina, PARNA Caparaó; 20°29'09"S, 041°49'17"W; 1,700 m; 20.IX.2013; obs.; 2 specimens, sex indet.

This Atlantic Forest endemic species is Endangered in Espírito Santo, Vulnerable in Minas Gerais, and Endangered in Brazil and globally (IUCN 2020).

Identification. This species was identified by its voice, which differs from *A. farinosa*, which also occurs in the park.

***Amazona farinosa* (Boddaert, 1783)**

Observations. BRAZIL – **Espírito Santo** • Pedra Menina, PARNA Caparaó; 20°30'02"S, 041°49'09"W; 19.VI.2014; obs.; at least 2 specimens, sex indet.

The group vocalization was heard during flight, at about 1,700 m, but we cannot specify their elevation as we did not delimit a maximum radius for detection. This species was recorded during point-count in an ecotone between upper montane rainforest and Campos de Altitude vegetation.

This species is threatened due to illegal capture and deforestation, and is considered Critically Endangered in Minas Gerais, Endangered in Espírito Santo, and Near Threatened globally. Records of *A. farinosa* are concentrated further north in Espírito Santo (e.g., Srбек-Araujo et al. 2012; Faria et al. 2016). In Minas Gerais, this species is already considered extinct in some regions (Ribon et al. 2004). Although it is usually found in the Atlantic Forest lowlands, it can reach higher altitudes (Donegan 2012). Moreover, there are records of this species for the Caparaó Mountains, at Bananal (ca. 800–900 m), municipality of Espera Feliz, Minas Gerais (MNRJ 3905). There is also an audio recording of *A. farinosa* in the Reserva Biológica Augusto Ruschi (780–1,050 m), which is a mountainous part of the municipality of Santa Teresa, Espírito Santo (FNJV 9156).

Identification. The group was identified by its characteristic low-pitched and melodious call, usually a repeated “tchóp, tchóp, tchóp” (Sick 2001). These calls differ from

those of *A. vinacea*, which also occurs in the park.

Passeriformes, Thamnophilidae

***Drymophila ferruginea* (Temminck, 1822)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'30"S, 041°50'56"W; above 1,500 m; 15.XII.2012; obs.; 1 specimen, sex indet. • same locality; 29.VI.2013; obs.; 1 specimen, sex indet. • same locality; 06.VI.2014; obs.; 1 specimen, sex indet. • same locality; 11.V.2015; obs.; 1 specimen, sex indet. • same locality; 17.VI.2016; obs.; 1 specimen, sex indet.

Identification. Males have a black crown, white superciliary, and a stripe below the eye. Body rufescent brown, wings and tail black, tail tipped with white. Females have a similar pattern but body is paler and crown is streaked. The song is simple and less snarly, distinct from the other *Drymophilas* species.

***Drymophila genei* (Filippi, 1847)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; above 1,400 m; 15.XII.2012; obs.; 2 specimens, sex indet. • same locality; 29.VI.2013; obs.; 1 specimen, sex indet. • same locality; 28.X.2013; obs.; 2 specimens, sex indet. • same locality; 08.III.2014; obs.; 2 specimens, sex indet. • same locality; 06.VI.2014; obs.; 2 specimens, sex indet. • same locality; 11.V.2015; obs.; 1 specimen, sex indet. • same locality; 17.VI.2016; obs.; 1 specimen, sex indet. • same locality; 04.VI.2017; obs.; 1 specimen, sex indet. • same locality; 09.VI.2018; obs.; 2 specimens, sex indet. – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'32"S, 041°49'18"W; above 1,600 m; 26.X.2012; obs.; 12 specimens (3 ♀, 4 ♂, 8 sex indet) • same locality; 26.V.2013; obs.; 7 specimens, sex indet. • same locality; 20.IX.2013; obs.; 8 specimens (2 ♂, 2 ♀, 6 sex indet) • same locality; 25.I.2014; obs.; 8 specimens (1 ♂, 7 sex indet).

This Atlantic Forest endemic species is Endangered in Espírito Santo (Chaves et al. 2019) and Vulnerable in Minas Gerais (COPAM 2010). *Drymophila genei* was usually recorded in association with bamboo or near a road. Although fairly common in the park, *D. genei* is strictly montane, so it has a small range and specialized habitat requirements (Sick 2001; Zimmer and Isler 2020). It has also been recorded in sympatry with *D. ochropyga* in Alto Caparaó and Santa Marta, between 1,500 and 1,650 m.

Identification. This species was observed and heard. It was identified by its black crown and white superciliary. Unlike its congeners, it has rufous wings and tail. Voice is a snarling level pitch (Ridgely and Tudor 2009).

***Drymophila ochropyga* (Hellmayr, 1906)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'09"S, 041°50'52"W; above 1,300 m; 15.XII.2012; obs.; 2 specimens, sex indet. • same locality; 29.VI.2013; obs.; 2 specimens, sex indet. • same locality; 28.X.2013; obs.; 2 specimens, sex indet.

• same locality; 06.VI.2014; obs.; 2 specimens, sex indet. • same locality; 11.V.2015; obs.; 1 specimen, sex indet. • same locality; 17.VI.2016; obs.; 1 specimen, sex indet. • same locality; 04.VI.2017; obs.; 1 specimen, sex indet. • same locality; 09.VI.2018; obs.; 2 specimens, sex indet. – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'37"S, 041°49'19"W; at 1,581 m; 20.IX.2013; obs.; 1 specimen, sex indet. • Santa Marta, PARNA Caparaó; 20°29'27"S, 041°44'46"W; above 1,200 m; 19.VIII.2012; obs.; 1 specimen, sex indet.

Identification. Males have a black crown, white superciliary, and rufous lower underparts. Throat and breast are streaked with black and white. Tail is blackish, tipped white. Females have a similar pattern, but crown is streaked and underparts are buff. The song is a two-note nasal snarl (Ridgely and Tudor 2009).

Conopophagidae

***Conopophaga melanops* (Vieillot, 1818)**

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'06"S, 041°49'26"W; 1,864 m; 26.V.2013; obs.; 1 ♀.

Identification. Male underparts are mainly grey, with white throat. Upperparts are brown, with brownish-orange wing coverts. Crown bright orange-rufous and face black. Female resembles *C. lineata*. The song is a fast trill lasting 5–8 seconds (Ridgely and Tudor 2009).

Grallariidae

***Grallaria varia* (Boddaert, 1783)**

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'31"S, 041°44'06"W; 971 m; 15.II.2014; obs.; 1 specimen, sex indet.

Grallaria varia is Critically Endangered in Minas Gerais, Endangered in Espírito Santo, and Vulnerable in Brazil (ICMBio 2018). The subspecies *G. v. intercedens* Berlepsch & Leverkühn, 1890 is Vulnerable in Brazil, but the attribution of PARNA Caparaó's population to this subspecies requires confirmation (ICMBio 2018).

Identification. This species was identified by its voice, a series of deep, hollow notes which accelerate and increase in volume (Sick 2001; Ridgely and Tudor 2009).

Dendrocolaptidae

***Dendrocincla turdina* (Lichtenstein, 1820)**

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'25"S, 041°50'42"W; above 1,600 m; 09.VI.2018; obs.; 1 specimen, sex indet. – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'32"S, 041°49'18"W; above 1,600 m; 26.X.2012; obs.; 2 specimens, sex indet. • same locality; 26.V.2013; obs.; 3 specimens, sex indet. • same locality; 20.IX.2013; obs.; 2 specimens, sex indet. • same locality; 19.VI.2014; obs.; 1 specimens, sex indet. • Santa Marta, PARNA Caparaó; 20°29'30"S, 041°44'11"W; above 1,000 m; 19.VIII.2012;



Figure 6. Birds recorded in PARNA Caparaó. **A.** *Xiphorhynchus fuscus*. **B.** *Sporophila nigricalis* (male). **C.** *Thamnophilus caerulescens* (female). **D.** *Turdus rufiventris*. **E.** *Stephanoforus diadematus*. **F.** *Tachyphonus coronatus* (female). **G.** *Thamnophilus ruficapillus*. **H.** *Synallaxis cinerascens*. **I.** *Tangara desmaresti*. **J.** *Stephanoxis lalandi* (male). **K.** *Sittasomus griseicapillus*. **L.** *Tricothraupis melanops* (male).

obs.; 2 specimens, sex indet.

There is a specimen collected by E. Kaempfer in 1929 at “Segredo do Veadó” in the Caparaó Mountains (AMNH 317631). This species is very common (Ridgely et al. 2015), but there were no other records from the park until now, more than 80 years later.

Identification. Identified by having a uniformly brown body, with crown and throat faintly buff. Its songs are monotonous, randomly oscillating, and may last for a minute or more (Ridgely and Tudor 2009).

Furnariidae

Cichlocolaptes leucophrus (Jardine & Selby, 1830)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'25"S, 041°50'42"W; 1,651 m; 15.XII.2012; obs.; 3 specimens, sex indet. – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'31"S, 041°44'06"W; 1,000 m; 15.II.2014; obs.; 1 specimen, sex indet.

This Atlantic Forest endemic species is Endangered in both Minas Gerais and Espírito Santo. It was listed for Minas Gerais by Mattos (1993), but recent records are scarce (WikiAves, Xeno-canto, GBIF) and our new data is therefore important for this state. There is also a specimen collected by Emil Kaempfer (AMNH 316817) in 1929 at “Gruta da Pedra Menina” in the Caparaó Mountains. Since then, there were no records for the park until now, more than 80 years later.

Identification. This species was identified by its rufous-brown body, streaked on the back, belly and crown, with a pale buff superciliary and long, straight bill (Ridgely and Tudor 2009).

Cotingidae

Carpornis cucullata (Swainson, 1821)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'25"S, 041°50'42"W; up to 1,600 m; 28.X.2013; obs.; 1 specimen, sex indet. • same locality; 04.VI.2017; obs.; 1 specimen, sex indet. – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'27"S, 041°44'46"W; 1,182 m 19.VIII.2012; obs.; 1 specimen, sex indet.

This Atlantic Forest endemic species is Endangered in Minas Gerais, Vulnerable in Espírito Santo, and Near Threatened globally (IUCN 2020).

Identification. This species was identified by its voice, a powerful, far-carrying, abrupt “cuckoo-like” whistle that sounds like its Portuguese vernacular name (corocoxó) (Sick 2001; Ridgely and Tudor 2009; Ridgely et al. 2015).

Procnias nudicollis (Vieillot, 1817)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'31"S, 041°44'06"W; 19.IX.2012; obs.; 2 specimens, sex indet. • same locality; 21.IV.2013, obs.; 1 specimen, sex indet. • same locality; 23.XI.2013; obs.; 2 specimens, sex indet. • same locality; 15.II.2014; obs.; 2 specimens, sex indet.

This Atlantic Forest endemic species is Vulnerable in Espírito Santo and Endangered in Minas Gerais. Although relatively common in protected areas, including the PARNA Caparaó, populations of this species are declining due to habitat loss and illegal capture (BirdLife International 2021), placing it as globally Vulnerable according to IUCN (2020) and Birdlife International (2021).



Figure 7. Birds recorded in PARNA Caparaó. **A.** *Trogon surrucura* (male). **B.** *Trogon viridis* (male). **C.** *Thraupis ornata*. **D.** *Zonotrichia capensis*. **E.** *Turdus albicollis*. **F.** *Turdus leucomelas*.

Identification. This species was identified by its all white colour, with the ocular area and throat patch bare and bright greenish in males. However, it was usually identified by its characteristic very loud metallic call (Ridgely and Tudor 2009).

Onychorhynchidae

Myiobius atricaudus Lawrence, 1863

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'09"S, 041°50'59"W; 1,308 m; 17.VI.2016; obs.; 1 specimen, sex indet.

There is a specimen collected in Ibitirama (formerly Santa Barbara do Caparaó) by Kaempfer in 1929 (AMNH 317748). Another specimen was collected and deposited at the National Museum (MNRJ 48376) in Patrimônio da Penha, on the Pedra Escorada trail, in Divino de São Lourenço, Espírito Santo, in 2011.

Identification. This species was identified by its characteristic yellow rump and black tail. Body olive above, plain yellowish buff below (Ridgely and Tudor 2009). It has a long black tail with central rectrices longer than distal ones (JF Pacheco in WikiAves).

Tyrannidae

Myiopagis caniceps (Swainson, 1835)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'30"S, 041°44'11"W; 19.VIII.2012; obs.; 1 specimen, sex indet.

Identification. Body greyish, paler below and with whitish throat. Wings black with two pale bars and edging. Males are dull grey above, with a white coronal stripe. Females are olive above, with a grey head and a yellowish coronal stripe. The call is a fast and shrill chipping which descends and fades towards the end (Ridgely and Tudor 2009).

Knipolegus lophotes Boie, 1828

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'40"S, 041°43'55"W; 23.XI.2013; obs.; 1 specimen, sex indet.

Identification. The body is large and black, with a prominent crest and black bill. This species has a white band hidden along the base of primaries, which can be seen in flight (Ridgely and Tudor 2009).

Fringillidae

Euphonia chlorotica (Linnaeus, 1766)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'59"W; 17.VI.2016; obs.; 1 ♂.

Identification. Males are steely blue above, with a yellow forecrown and underparts and a diagnostically dark throat. The voice is clear, far-carrying, and consists of two notes (Ridgely and Tudor 2009).

Passerellidae

Ammodramus humeralis (Bosc, 1792)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°30'12"S, 041°49'04"W; 26.X.2012; obs.; 1 specimen, sex indet.

Identification. Upperparts are brownish grey, with blackish chestnut streaking. Underparts are whitish. Lores and bend of wings are yellow, and inner flight feathers have a rufous edge. The voice is high-pitched and quite musical, with several variations (Ridgely and Tudor 2009).

Icteridae

Cacicus haemorrhous (Linnaeus, 1766)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°25'01"S, 041°51'01"W; above 1,300 m; 28.X.2013; obs.; 2 specimens, sex indet.

There are two specimens collected by Kaempfer in 1929 at “Santa Barbara do Caparaó” (AMNH 318075) and “Segredo do Veado” (AMNH 318076), in the Caparaó Mountains. Although common, especially in anthropized areas, there were no records of this species from the park in more than 80 years.

Identification. Distinguished by its glossy black body, with red lower back and rump, blue eyes, and yellow beak. The call consists of a variety of harsh or guttural sounds mixed with melodic whistles (Sick 2001; Ridgely and Tudor 2009).

Cardinalidae

Piranga flava (Vieillot, 1822)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°30'12"S, 041°49'04"W; 20.IX.2013; obs.; 1 ♂.

Identification. Males are red, brighter below and on forecrown. Lores, wings, and tail are dusker. Females have similar patterns, but yellowish olive above and bright yellow below (Ridgely and Tudor 2009).

Habia rubica (Vieillot, 1817)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'27"S, 041°49'18"W; 1,645 m; 25.I.2014; obs.; 1 specimen, sex indet.

Habia rubica is known to reach elevations up to 800 m (Ridgely et al. 2015), but there are records from several mountainous regions in Espírito Santo (see WikiAves) and at Serra do Brigadeiro (1,000–1,900 m), Minas Gerais (Simon et al. 1999). There is a specimen collected by Emil Kaempfer in 1929 at “Segredo do Veado” in the Caparaó Mountains (AMNH 318038). Although relatively common (Sick 2001), there were no records for the park until now, more than 80 years later.

Identification. This species was identified by its characteristic vocalization, which consists of a distinctive grating scold that is often repeated in a series. It has a sweet, melodic song consisting of a leisurely series of short,

clear phrases (Ridgely and Tudor 2009).

Thraupidae

Orchesticus abeillei (Lesson, 1839)

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°29'09"S, 041°49'17"W; 1,772 m; 26.X.2012; obs.; 2 specimens, sex indet. – Minas Gerais • Alto Caparaó, PARNA Caparaó; 1,256 m; 28.X.2013; obs.; 1 specimen, sex indet.

Identification. The bill is robust and the body is mostly brown, but more rufescent on the wings and tail, and dusker on the crown. The face, forehead, and broad superciliary are cinnamon, with a thin, blackish eyeline (Ridgely and Tudor 2009).

Pipraeidea melanonota (Vieillot, 1819)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'24"S, 041°44'26"W; 21.IV.2013; obs.; 1 ♂.

Identification. The bright blue crown and nape contrast with black mask; dusky blue above, uniform buff below (Ridgely and Tudor 2009).

Thraupis cyanoptera (Vieillot, 1817)

Observations. BRAZIL – Espírito Santo • Santa Marta, PARNA Caparaó; 20°29'26"S, 041°44'24"W; 21.IV.2013; obs.; 1 specimen, sex indet.

Identification. The body is uniformly grey-blue but is larger than *T. sayaca*, with a heavier bill, deep-blue wings, a buffy belly, and dark lores (Ridgely and Tudor 2009).

Sporophila nigricollis (Vieillot, 1823)

Figure 6B

Observations. BRAZIL – Espírito Santo • Pedra Menina, PARNA Caparaó; 20°30'12"S, 041°49'04"W; 1,417 m; 26.X.2012; obs.; 1 ♂.

Identification. Males have black crown, face, throat, and chest, contrasting with the pale yellow belly (Ridgely and Tudor 2009).

Thlypopsis sordida (d'Orbigny & Lafresnaye, 1837)

Observations. BRAZIL – Minas Gerais • Alto Caparaó, PARNA Caparaó; 20°24'42"S, 041°50'57"W; 1,470 m; 11.V.2015; obs.; 1 ♂.

This species is known to reach elevations up to 1,200 m in forests or anthropized areas (Ridgely et al. 2015). It has been recorded in several mountainous regions in Espírito Santo (cf. WikiAves) and at Serra do Brigadeiro (1,000–1,900 m), Minas Gerais (Simon et al. 1999). There are two specimens collected by Emil Kaempfer in 1929 in Alto Caparaó, Minas Gerais (AMNH 317165 and 317166), but there have been no records from the park for more than 80 years until now.

Identification. Identified by having a gray body with an orange-rufous head which becomes yellow on face and throat (Ridgely and Tudor 2009).

Discussion

We recorded 216 species in Caparaó National Park, representing 32% of the birds of Espírito Santo ($n = 654$, Simon 2009; $n = 666$, WikiAves (accessed on 2021-3-24)) and 27% of the birds of Minas Gerais ($n = 777$, Mattos et al. 1993; $n = 800$, WikiAves (accessed on 2021-3-24)). The Brazilian Atlantic Forest has about 891 bird species (Moreira-Lima 2013), with 241 of them endemic (Stotz et al. 1996; Vale et al. 2018). Therefore, at PARNA Caparaó we recorded 24% of the Atlantic Forest avifauna and 28% of its endemism. These rates highlight the importance of this park in preserving the bird fauna of this biome.

We recorded two globally, three nationally, and 21 regionally threatened species. Moreover, we recorded 64 endemic species with a restricted distribution (Bencke et al. 2006). Despite these criteria, some of these species were very common in the park: *Penelope obscura*, *Phaethornis eurynome*, *Thalurania glaucopis*, *Pyrrhura frontalis*, *Ramphastos dicolorus*, *Pyriglena leucoptera*, *Drymophila genei*, *Drymophila ochropyga*, *Xiphorhynchus fuscus*, *Synallaxis ruficapilla*, *Conopophaga lineata*, *Chiroxiphia caudata*, *Mionectes rufiventris*, *Hylophilus poicilotis*, *Tangara desmaresti*, *Tangara cyanoventris*, *Thraupis ornata*, *Hemithraupis ruficapilla*, *Tachyphonus coronatus*, and *Microspingus lateralis*.

We recorded 17 species of birds for the first time from PARNA Caparaó. Of particular note are *Baryphthengus ruficapillus* and *Eleoscytalopus indigoticus* (Endangered in Espírito Santo), and *Piculus polyzonus* (nationally Endangered). We also draw attention to species such as *Tolmomyias poliocephalus*, *Arremon taciturnus*, and *Thalurania furcata*, which we observed at elevations higher than usual and were not frequent in our sampling. Moreover, *B. ruficapillus* and *A. taciturnus* are in Ruschi's list (1978), but since it contains some errors and needs reviewing, we did not consider his records.

From the species deposited in museum collections from the early 20th century, six were recorded only by us since then: *Chionomesa lactea*, *Dendrocincla turdina*, *Cichlocolaptes leucophrus*, *Cacicus haemorrhous*, *Thlypopsis sordida*, and *Habia rubica*. Although Kaempfer's itinerary included several sites in the Caparaó Mountains, we could not determine which ones were inside the park (Paynter and Traylor 1991).

The avifauna recorded by our fieldwork in PARNA Caparaó does not represent all the richness in the park, as shown by the species accumulation curve (Fig. 2). To achieve a more complete list, we compiled data published by other authors (Peixoto-Velho 1923; Bauer 1999; Sick 2001; Vasconcelos 2003; de Paula and Carvalho 2007), in online audio and image databases (WikiAves, Xencanto, Fonoteca Jacques Vielliard), and museums around the world together with our own. We produced a concatenated list with 348 bird species for PARNA Caparaó, 98 of them endemic to the Atlantic Forest Biome and 33 threatened species (Appendix Table A1).

Besides the 17 species newly documented here, 71

species were previously reported only by other authors (Peixoto-Velho 1923; Bauer 1999; Sick 2001; Vasconcelos 2003; de Paula and Carvalho 2007), nine species had records only in audiovisual databases (WikiAves, Xencanto, FNJV), and six species are based only on specimens in museums.

These specimens in museum collections were collected in the early 20th century and the species they represent have been undocumented since then: *Chelidoptera tenebrosa* (Ibitirama, Serra do Caparaó AMNH 317449), *Drymophila squamata* (Alto Caparaó, Serra do Caparaó, AMNH 316746, 316747), *Myiobius barbatus* (Ibitirama, Serra do Caparaó, AMNH 317747), *Phylloscartes oustaleti* (Segredo do Veado, Serra do Caparaó, AMNH 317713, 317714), *Euscarthmus meloryphus* (Alto Caparaó, Serra do Caparaó, AMNH 316912, 316913), and *Attila phoenicurus* (Segredo do Veado, Serra do Caparaó AMNH 317851). None of these species are threatened.

As for the species identified by Ruschi (1978) from the Caparaó Mountains, 185 are confirmed based on our fieldwork and the concatenated list.

Almost 24% of the Atlantic Forest avifauna is endemic (Stotz et al. 1996; Moreira-Lima, 2013; Vale et al. 2018). We recorded 31% endemic species and 28% on the concatenated list. About 10% of the species recorded in our study are threatened, or 9% in the concatenated list. These data show the importance of Caparaó National Park to the conservation of the bird fauna, confirming it as an Important Bird Area for having species that are globally threatened and with restricted distribution (Bencke et al. 2006).

PARNA Caparaó has a rich avifauna, a high level of endemism, and harbors several threatened species. The park attracts many tourists and has surrounding hotel buildings, as well as ecotourism activities, and agriculture and livestock, and continuous efforts for the conservation of the bird fauna of the park is of great importance.

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Authors' Contributions

Conceptualization: CDF. Formal Analysis: CDF. Investigation: CDF. Methodology: CDF, MNMB. Project administration: CDF. Visualization: CDF. Writing – original

draft: CDF, MNMB. Writing – review and editing: CDF, MNMB.

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Appendix

Table A1. Concatenated list of birds recorded in Parque Nacional do Caparaó. Present study = our data from 2012 to 2018. Bibliographic resources: 1 = Peixoto-Velho (1923), 2 = Sick (2001), 3 = Bauer (1999), 4 = de Paula and Carvalho (2007), 5 = Vasconcelos (2003), 6 = Ruschi (1978). Databases: AMNH = American Museum of Natural History, MNRJ = Museu de História Natural do Rio de Janeiro, MUZUSP = Museu de Zoologia da Universidade de São Paulo, MBML = Instituto Nacional da Mata Atlântica (formerly Museu de Biologia Mello Leitão), LACM = Natural History Museum of Los Angeles County, FNJV = Fonoteca Nacional Jacques Vielliard; ZUEC = Museu de Zoologia da Universidade Estadual de Campinas “Adão José Cardoso”, XC = Xeno-canto, WA = WikiAves. Conservation status: CR = Critically endangered, EN = Endangered, VU = Vulnerable. Endemic species (Endem.), Endemic species with restricted distribution (ERD). Migratory status: M = Migratory, PM = Partially migratory.

Family	Species	Present study	Bibliographic resources	Databases	Status			Endem.	E.R.D.	Migr.
					Taxon	MG	BR			
Tinamidae Gray, 1839	<i>Tinamus solitarius</i> (Vieillot, 1819)		4, 6	AMNH	EN			1		
	<i>Crypturellus obsoletus</i> (Temminck, 1815)	1	3, 4, 6	AMNH, WA						
	<i>Crypturellus tataupa</i> (Temminck, 1815)	1								1
	<i>Rhynchotus rufescens</i> (Temminck, 1815)			XC						
Anatidae Leach, 1820	<i>Amazonetta brasiliensis</i> (Gmelin, 1789)		3							
Cracidae Rafinesque, 1815	<i>Penelope superciliaris</i> Temminck, 1815	1	4, 6							

Family	Species	Present study	Bibliographic resources	Databases	Status			Endem.	E.R.D.	Migr.
					Taxon	MG	BR			
Odontophoridae Gould, 1844	<i>Penelope obscura</i> Temminck, 1815	1	2, 3, 4, 6	AMNH, FNVJ, WA						
	<i>Odontophorus capueira</i> (Spix, 1825)	1	4, 6		EN	EN		1		
Columbidae Leach, 1820	<i>Columba livia</i> Gmelin, 1789		3, 4							
	<i>Patagioenas picazuro</i> (Temminck, 1813)	1	3, 4	WA						
	<i>Patagioenas cayennensis</i> (Bonnaterre, 1792)	1	3, 4	WA						
	<i>Patagioenas plumbea</i> (Vieillot, 1818)	1	3, 4, 6	WA						
	<i>Leptotila verreauxi</i> Bonaparte, 1855	1	1, 3, 4, 6	AMNH						
	<i>Leptotila rufaxilla</i> (Richard & Bernard, 1792)	1	3, 4	WA						
	<i>Zenaida auriculata</i> (Des Murs, 1847)		4							
	<i>Columbina talpacoti</i> (Temminck, 1810)	1	1, 3, 4, 5, 6,							
	<i>Columbina squammata</i> (Lesson, 1831)	1	4	WA						
Cuculidae Leach, 1820	<i>Guira guira</i> (Gmelin, 1788)		1, 3, 4, 6							
	<i>Crotophaga ani</i> Linnaeus, 1758		3, 4, 6	AMNH						
	<i>Tapera naevia</i> (Linnaeus, 1766)	1	3, 4, 6							
	<i>Piaya cayana</i> (Linnaeus, 1766)	1	3, 4, 6	AMNH, MNRJ, XC						
Caprimulgidae Vigors, 1825	<i>Nyctidromus albicollis</i> (Gmelin, 1789)	1	1, 3, 4, 6	AMNH, MNRJ						
	<i>Hydropsalis longirostris</i> (Bonaparte, 1825)		2, 3, 5, 6	MNRJ, WA						
	<i>Hydropsalis torquata</i> (Gmelin, 1789)	1	3	WA						
	<i>Hydropsalis forcipata</i> (Nitzsch, 1840)		4, 6	AMNH, WA	CR			1		
Apodidae Olphe-Galliard, 1887	<i>Streptoprocne zonaris</i> (Shaw, 1796)	1	3, 4, 6	WA						
	<i>Chaetura meridionalis</i> Hellmayr, 1907	1	3							M
Trochilidae Vigors, 1825										
	<i>Florisuga fusca</i> (Vieillot, 1817)		4, 6					1		
	<i>Glaucis hirsutus</i> (Gmelin, 1788)		4, 6							
	<i>Phaethornis squalidus</i> (Temminck, 1822)		6	AMNH						
	<i>Phaethornis pretrei</i> (Lesson & Delattre, 1839)	1	1, 3, 4, 6							
	<i>Phaethornis eurynome</i> (Lesson, 1832)	1	3, 4, 6	AMNH, WA				1	1	
	<i>Colibri serrirostris</i> (Vieillot, 1816)	1	3, 4, 5, 6	XC, WA						
	<i>Anthracothorax nigricollis</i> (Vieillot, 1817)		4, 6							
	<i>Lophornis magnificus</i> (Vieillot, 1817)		6	AMNH						
	<i>Heliodoxa rubricauda</i> (Boddaert, 1783)	1	1, 3, 6	WA				1	1	
	<i>Heliomaster squamosus</i> (Temminck, 1823)	1								
	<i>Calliphlox amethystina</i> (Boddaert, 1783)	1	4, 6							
	<i>Chlorostilbon lucidus</i> (Shaw, 1812)	1	1, 3, 4, 6	AMNH, MNRJ, WA						
	<i>Stephanoxis lalandi</i> (Vieillot, 1818)	1	1, 2, 3, 4, 5, 6	AMNH, MNRJ, XC, WA	EN			1	1	
	<i>Campylopterus largipennis</i> (Boddaert, 1783)	1								
	<i>Thalurania furcata</i> (Gmelin, 1788)	1								
	<i>Thalurania glaucopis</i> (Gmelin, 1788)	1	3, 6	AMNH				1	1	
	<i>Eupetomena macroura</i> (Gmelin, 1788)		3, 4, 6	WA						
	<i>Aphantochroa cirrochloris</i> (Vieillot, 1818)	1	4, 6					1	1	
	<i>Chrysuronia versicolor</i> (Vieillot, 1818)	1	6	MNRJ						
	<i>Leucochloris albicollis</i> (Vieillot, 1818)	1	1, 3, 4, 5, 6	AMNH, XC, WA				1	1	
	<i>Chionomesa fimbriata</i> (Gmelin, 1788)	1	4							
	<i>Chionomesa lactea</i> (Lesson, 1832)	1	6	AMNH						
	<i>Chlorestes notata</i> (Reich, 1793)		4, 6							
Rallidae Rafinesque, 1815										
	<i>Laterallus melanophauius</i> (Vieillot, 1819)		3							
	<i>Mustelirallus albicollis</i> (Vieillot, 1819)		3, 6							
	<i>Pardirallus nigricans</i> (Vieillot, 1819)		3, 4, 6							
	<i>Aramides cajaneus</i> (Statius Müller, 1776)	1	4							
	<i>Aramides saracura</i> (Spix, 1825)	1	3	WA				1	1	
	<i>Gallinula galeata</i> (Lichtenstein, 1818)		3							
Charadriidae Leach, 1820	<i>Vanellus chilensis</i> (Molina, 1782)	1	3, 4, 6,							
Jacanidae Chenu & Des Murs, 1854										
	<i>Jacana jacana</i> (Linnaeus, 1766)		3, 4, 6							

Family	Species	Present study	Bibliographic resources	Databases	Status			Endem.	E.R.D.	Migr.
					Taxon	MG	BR			
Ardeidae Leach, 1820	<i>Ardea alba</i> Linnaeus, 1758		3, 4							
	<i>Syrigma sibilatrix</i> (Temminck, 1824)		4							
Cathartidae Lafresnaye, 1839	<i>Coragyps atratus</i> (Bechstein, 1793)	1	2, 3, 4, 6							
	<i>Cathartes aura</i> (Linnaeus, 1758)	1	3, 4							
	<i>Cathartes burrovianus</i> Cassin, 1845	1								
Accipitridae Vigors, 1824	<i>Leptodon cayanensis</i> (Latham, 1790)		4	AMNH						
	<i>Spizaetus tyrannus</i> (Wied, 1820)		6	WA						
	<i>Harpagus diodon</i> (Temminck, 1823)	1		AMNH, WA						M
	<i>Ictinia plumbea</i> (Gmelin, 1788)	1	4, 6							PM
	<i>Accipiter striatus</i> Vieillot, 1808		4	WA						
	<i>Geranospiza caerulescens</i> (Vieillot, 1817)		4, 6							
	<i>Heterospizias meridionalis</i> (Latham, 1790)	1	3, 4, 6							
	<i>Rupornis magnirostris</i> (Gmelin, 1788)	1	3, 4, 6	WA						
	<i>Parabuteo unicinctus</i> (Temminck, 1824)		4, 6							
	<i>Parabuteo leucorrhous</i> (Quoy & Gaimard, 1824)		3							
	<i>Geranoaetus albicaudatus</i> (Vieillot, 1816)	1	3, 4, 6	WA						
	<i>Buteo brachyurus</i> Vieillot 1816		4							
	<i>Buteo albonotatus</i> Kaup, 1847	1								
Tytonidae Mathews, 1912	<i>Tyto furcata</i> (Temminck, 1827)		4, 6							
Strigidae Leach, 1820	<i>Megascops choliba</i> (Vieillot, 1817)		4, 6							
	<i>Megascops atricapilla</i> (Temminck, 1822)		4, 6		VU			1		
	<i>Pulsatrix koeniswaldiana</i> (Bertoni & Bertoni, 1901)	1		WA				1	1	
	<i>Strix hylophila</i> Temminck, 1825		4	AMNH, XC, WA				1		
	<i>Glaucidium brasilianum</i> (Gmelin, 1788)	1								
	<i>Athene cunicularia</i> (Molina, 1782)		3							
Trogonidae Lesson, 1828	<i>Trogon viridis</i> Linnaeus, 1766	1	4, 6							
	<i>Trogon surrucura</i> Vieillot, 1817	1	3	AMNH, WA				1	1	
	<i>Trogon rufus</i> Gmelin, 1788	1	3	AMNH, MNRJ, WA						
Momotidae Gray, 1840	<i>Baryphthengus ruficapillus</i> (Vieillot, 1818)	1			EN			1	1	
Alcedinidae Rafinesque, 1815	<i>Megaceryle torquata</i> (Linnaeus, 1766)	1	4							
Galbulidae Vigors, 1825	<i>Jacamaralcyon tridactyla</i> (Vieillot, 1817)		6	AMNH						
Bucconidae Horsfield, 1821	<i>Chelidoptera tenebrosa</i> (Pallas, 1782)			AMNH						
	<i>Malacoptila striata</i> (Spix, 1824)		6	AMNH						
	<i>Nystalus chacuru</i> (Vieillot, 1816)	1	3, 4	WA						
Ramphastidae Vigors, 1825	<i>Ramphastos vitellinus</i> Lichtenstein, 1823		3, 4, 6							
	<i>Ramphastos dicolorus</i> Linnaeus, 1766	1	3, 4	AMNH, WA				1	1	
	<i>Pteroglossus bailloni</i> (Vieillot, 1819)	1	4, 6	WA		VU		1	1	
	<i>Pteroglossus aracari</i> (Linnaeus, 1758)	1	4							
Picidae Leach, 1820	<i>Picumnus cirratus</i> Temminck, 1825	1	3, 4, 6	AMNH						
	<i>Melanerpes candidus</i> (Otto, 1796)		1, 3, 4, 6							
	<i>Melanerpes flavifrons</i> (Vieillot, 1818)		3, 6		VU			1		
	<i>Veniliornis maculifrons</i> (Spix, 1824)	1	1, 3, 6	MNRJ, WA				1	1	
	<i>Campephilus robustus</i> (Lichtenstein, 1818)	1	1, 3, 6	WA				1	1	
	<i>Dryocopus lineatus</i> (Linnaeus, 1766)	1	3, 4							
	<i>Celeus flavescens</i> (Gmelin, 1788)		6	AMNH						
	<i>Piculus polyzonus</i> (Valenciennes, 1826)	1				EN		1		
	<i>Piculus aurulentus</i> (Temminck, 1821)	1	3, 4	XC, WA				1	1	
	<i>Colaptes melanochloros</i> (Gmelin, 1788)		4, 6	AMNH						
	<i>Colaptes campestris</i> (Vieillot, 1818)	1	1, 3, 4, 5, 6	WA						

Family	Species	Present study	Bibliographic resources	Databases	Status			Endem.	E.R.D.	Migr.
					Taxon	MG	BR			
Cariamidae Bonaparte, 1850										
	<i>Cariama cristata</i> (Linnaeus, 1766)	1	3, 4, 6							
Falconidae Leach, 1820										
	<i>Herpetotheres cachinnans</i> (Linnaeus, 1758)	1	3							
	<i>Micrastur ruficollis</i> (Vieillot, 1817)	1	3							
	<i>Micrastur semitorquatus</i> (Vieillot, 1817)	1	4, 6							
	<i>Caracara plancus</i> (Miller, 1777)	1	3, 4, 6	WA						
	<i>Milvago chimachima</i> (Vieillot, 1816)	1	3, 4, 6	WA						
	<i>Falco sparverius</i> Linnaeus, 1758		3, 4, 6							
	<i>Falco deiroleucus</i> Temminck, 1825			WA						
	<i>Falco femoralis</i> Temminck, 1822		4							
Psittacidae Rafinesque, 1815										
	<i>Brotogeris tirica</i> (Gmelin, 1788)	1	4, 6					1	1	
	<i>Pionopsitta pileata</i> (Scopoli, 1769)		1, 3, 6	MNRJ	EN			1		
	<i>Pionus maximiliani</i> (Kuhl, 1820)	1	1, 3, 4	MNRJ						
	<i>Amazona vinacea</i> (Kuhl, 1820)	1	3, 4	WA	EN	VU	VU	1	1	
	<i>Amazona farinosa</i> (Boddaert, 1783)	1		MNRJ	EN	CR				
	<i>Pyrrhura frontalis</i> (Vieillot, 1817)	1	1, 3, 4, 6	AMNH, MNRJ, WA				1	1	
	<i>Pyrrhura leucotis</i> (Kuhl, 1820)		4		EN	CR	VU	1		
	<i>Aratinga auricapillus</i> (Kuhl, 1820)		3	XC						
	<i>Primolius maracana</i> (Vieillot, 1816)	1	6	WA						
	<i>Psittacara leucophthalmus</i> (Statius Müller, 1776)	1	3, 4, 6	WA						
Thamnophilidae Swainson, 1824										
	<i>Terenura maculata</i> (Wied, 1831)		3					1		
	<i>Formicivora serrana</i> Hellmayr, 1929			XC						
	<i>Rhopias gularis</i> (Spix, 1825)	1	3, 6	MNRJ				1	1	
	<i>Dysithamnus stictothorax</i> (Temminck, 1823)		3, 6	WA				1		
	<i>Dysithamnus mentalis</i> (Temminck, 1823)	1	3, 4	AMNH						
	<i>Herpsilochmus rufimarginatus</i> (Temminck, 1822)	1								
	<i>Thamnophilus ruficapillus</i> Vieillot, 1816	1	1, 2, 3, 5	MNRJ, XC, WA						
	<i>Thamnophilus caeruleus</i> Vieillot, 1816	1	1, 3, 4, 6	AMNH, MNRJ, WA						
	<i>Taraba major</i> (Vieillot, 1816)	1	4, 6							
	<i>Hypoedaleus guttatus</i> (Vieillot, 1816)	1	4	AMNH	VU			1	1	
	<i>Batara cinerea</i> (Vieillot, 1819)	1	3, 4, 6	WA	VU					
	<i>Mackenziaena leachii</i> (Such, 1825)	1	2, 3, 4, 5, 6	AMNH, MNRJ, XC, WA	EN			1	1	
	<i>Mackenziaena severa</i> (Lichtenstein, 1823)	1	3, 6	AMNH, WA				1	1	
	<i>Myrmoderus loricatus</i> (Lichtenstein, 1823)		3	AMNH				1		
	<i>Pyriglena leucoptera</i> (Vieillot, 1818)	1	3, 4	AMNH, WA				1	1	
	<i>Drymophila ferruginea</i> (Temminck, 1822)	1	3, 4, 6	AMNH, WA				1	1	
	<i>Drymophila genei</i> (Filippi, 1847)	1	2, 3, 4, 5	AMNH, MNRJ, XC, WA	EN	VU		1	1	
	<i>Drymophila ochropyga</i> (Hellmayr, 1906)	1	3, 4					1	1	
	<i>Drymophila squamata</i> (Lichtenstein, 1823)			AMNH						
Conopophagidae Sclater & Salvin, 1873										
	<i>Conopophaga melanops</i> (Vieillot, 1818)	1	4					1	1	
	<i>Conopophaga lineata</i> (Wied, 1831)	1	3, 4, 6	MNRJ, WA				1	1	
Grallariidae Sclater & Salvin, 1873										
	<i>Grallaria varia</i> (Boddaert, 1783)	1	3, 6		EN	CR	VU			
Rhinocryptidae Wetmore, 1926 (1837)										
	<i>Merulaxis ater</i> Lesson, 1830		3, 6		EN			1		
	<i>Eleoscytalopus indigoticus</i> (Wied, 1831)	1			EN			1	1	
	<i>Scytalopus speluncae</i> (Ménétrières, 1835)	1	2, 3, 5, 6	AMNH, MNRJ, MBML, XC, WA	EN			1	1	
Formicariidae Gray, 1840										
	<i>Chamaeza campanisona</i> (Lichtenstein, 1823)	1	2, 6		EN					
	<i>Chamaeza meruloides</i> Vigors, 1825	1	3, 4	WA				1	1	
Scleruridae Swainson, 1827										
	<i>Sclerurus scansor</i> (Ménétrières, 1835)		3, 4					1		
Dendrocolaptidae Gray, 1840										
	<i>Sittasomus griseicapillus</i> (Vieillot, 1818)	1	3, 4, 6	AMNH, MNRJ, WA						
	<i>Dendrocincla turdina</i> (Lichtenstein, 1820)	1	6	AMNH				1	1	
	<i>Dendrocolaptes platyrostris</i> Spix, 1825	1	1, 3	WA						

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					Taxon	MG	BR			
Xenopidae Bonaparte, 1854	<i>Xiphocolaptes albicollis</i> (Vieillot, 1818)	1	3, 4, 6	AMNH, WA						
	<i>Xiphorhynchus fuscus</i> (Vieillot, 1818)	1	3, 4, 6	AMNH, WA				1	1	
	<i>Campylorhamphus falcularius</i> (Vieillot, 1822)	1	3, 4, 6	XC, WA				1	1	
	<i>Lepidocolaptes squamatus</i> (Lichtenstein, 1822)	1	3	AMNH, WA				1	1	
	<i>Xenops minutus</i> (Sparrman, 1788)	1								
Furnariidae Gray, 1840	<i>Xenops rutilans</i> Temminck, 1821	1	3	WA						
	<i>Furnarius figulus</i> (Lichtenstein, 1823)		3, 4							
	<i>Furnarius rufus</i> (Gmelin, 1788)	1	1, 3, 4, 6	MNRJ						
	<i>Lochmias nematura</i> (Lichtenstein, 1823)	1	1, 3, 4, 5, 6	AMNH, MNRJ, WA						
	<i>Anabazenops fuscus</i> (Vieillot, 1816)	1	3, 4, 6	AMNH, MNRJ				1	1	
	<i>Cichlocolaptes leucophrus</i> (Jardine & Selby, 1830)	1		AMNH	EN	EN		1	1	
	<i>Heliobletus contaminatus</i> Pelzeln, 1859			AMNH, WA				1		
	<i>Anabacerthia amaurotis</i> (Temminck, 1823)		3	AMNH				1		
	<i>Anabacerthia lichtensteini</i> (Cabanis & Heine, 1859)	1	3, 6	AMNH, WA				1	1	
	<i>Syndactyla rufosuperciliata</i> (Lafresnaye, 1832)	1	1, 3, 4, 6	MNRJ, WA						
	<i>Dendroma rufa</i> (Vieillot, 1818)	1	3	AMNH						
	<i>Automolus leucophthalmus</i> (Wied, 1821)		6	AMNH						
	<i>Phacellodomus rufifrons</i> (Wied, 1821)	1	3, 4, 5	WA						
	<i>Phacellodomus ferrugineigula</i> (Pelzeln, 1858)		3					1		
	<i>Asthenes moreirae</i> (Miranda-Ribeiro, 1906)	1	1, 3, 4, 5, 6	LACM, MNRJ, XC, WA	CR			1	1	
	<i>Cranioleuca pallida</i> (Wied, 1831)	1	3, 6	AMNH, MNRJ, XC				1	1	
	<i>Certhiaxis cinnamomeus</i> (Gmelin, 1788)		3							
	<i>Synallaxis cinerascens</i> Temminck, 1823	1	2, 3	WA						
	<i>Synallaxis ruficapilla</i> Vieillot, 1819	1	1, 3, 4, 6	MNRJ, MUZUSP, WA				1	1	
	<i>Synallaxis spixi</i> Sclater, 1856	1	3, 4, 5	AMNH, MNRJ, XC, WA						
	<i>Synallaxis albescens</i> Temminck, 1823		4							
	<i>Synallaxis frontalis</i> Pelzeln, 1859		4							
Pipridae Rafinesque, 1815	<i>Illicura militaris</i> (Shaw & Nodder, 1809)	1	3, 4, 6	MNRJ, WA				1	1	
	<i>Chiroxiphia caudata</i> (Shaw & Nodder, 1793)	1	3, 4, 6	AMNH, WA				1	1	
	<i>Manacus manacus</i> (Linnaeus, 1766)		4, 6	AMNH						
	<i>Machaeropterus regulus</i> (Hahn, 1819)		4					1		
	<i>Ceratopripra rubrocapilla</i> (Temminck, 1821)		4, 6		VU					
Cotingidae Bonaparte, 1849	<i>Carpornis cucullata</i> (Swainson, 1821)	1	1, 3, 4, 6	MNRJ, WA	VU	EN		1	1	
	<i>Carpornis melanocephala</i> (Wied, 1820)		4		EN	CR	VU	1		
	<i>Phibalura flavirostris</i> Vieillot, 1816		6	AMNH						
	<i>Lipaugus lanioides</i> (Lesson, 1844)		1, 3, 6	AMNH, MNRJ	VU			1		
	<i>Procnias nudicollis</i> (Vieillot, 1817)	1	3, 4, 6	AMNH, WA	VU	EN		1	1	
Tityridae Gray, 1840	<i>Schiffornis virescens</i> (Lafresnaye, 1838)	1	3, 4, 6	AMNH, MNRJ				1	1	
	<i>Laniisoma elegans</i> (Thunberg, 1823)		6	AMNH						
	<i>Tityra cayana</i> (Linnaeus, 1766)		4, 6							
	<i>Pachyramphus viridis</i> (Vieillot, 1816)	1	4	AMNH						
	<i>Pachyramphus castaneus</i> (Jardine & Selby, 1827)	1	3, 6	AMNH, WA						
	<i>Pachyramphus polychopterus</i> (Vieillot, 1818)	1	3, 6							PM
Oxyruncidae Ridgway, 1906 (1831)										
	<i>Oxyruncus cristatus</i> Swainson, 1821		3, 6							
Onychorhynchidae Tello, Moyle, Marchese & Cracraft, 2009										
	<i>Myiobius barbatus</i> (Gmelin, 1789)			AMNH						
	<i>Myiobius atricaudus</i> Lawrence, 1863	1	6	AMNH, MNRJ						
Platyrinchidae Bonaparte, 1854										
	<i>Platyrinchus mystaceus</i> Vieillot, 1818	1	3, 4, 6	AMNH, WA						
Rhynchocyklidae Berlepsch, 1907										
	<i>Mionectes rufiventris</i> Cabanis, 1846	1	1, 3, 4, 6	AMNH, WA				1	1	
	<i>Leptopogon amaurocephalus</i> Tschudi, 1846	1	3, 4	WA						
	<i>Phylloscartes ventralis</i> (Temminck, 1824)	1	2, 3, 4, 6	AMNH, XC, WA						
	<i>Phylloscartes oustaleti</i> (Sclater, 1887)			AMNH						

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					Taxon	MG	BR			
Tyrannidae Vigors, 1825	<i>Phylloscartes difficilis</i> (Ihering & Ihering, 1907)		2, 6	WA				1		
	<i>Tolmomyias sulphurescens</i> (Spix, 1825)	1	3, 4, 6	AMNH						
	<i>Tolmomyias poliocephalus</i> (Taczanowski, 1884)	1								
	<i>Todirostrum poliocephalum</i> (Wied, 1831)	1	3, 4	AMNH				1	1	
	<i>Todirostrum cinereum</i> (Linnaeus, 1766)	1	3							
	<i>Poecilotriccus plumbeiceps</i> (Lafresnaye, 1846)	1	3, 4, 6							
	<i>Myiornis auricularis</i> (Vieillot, 1818)		3, 6	AMNH, WA				1		
	<i>Hemitriccus diops</i> (Temminck, 1822)	1	3, 6	AMNH				1	1	
	<i>Hemitriccus orbitatus</i> (Wied, 1831)		4		EN			1		
	<i>Hemitriccus nidipendulus</i> (Wied, 1831)			WA				1		
	<i>Hirundinea ferruginea</i> (Gmelin, 1788)	1	3, 4	AMNH, WA						
	<i>Euscarthmus meloryphus</i> Wied, 1831			AMNH						
	<i>Tyranniscus burmeisteri</i> (Cabanis & Heine, 1859)	1	3	AMNH						
	<i>Camptostoma obsoletum</i> (Temminck, 1824)	1	3, 4, 6	AMNH, WA						
	<i>Elaenia flavogaster</i> (Thunberg, 1822)	1	3, 6	WA						
	<i>Elaenia chilensis</i> Hellmayr, 1927		3, 6							
	<i>Elaenia mesoleuca</i> (Deppe, 1830)			XC, WA						
	<i>Elaenia obscura</i> (d'Orbigny & Lafresnaye, 1837)	1	4	AMNH, XC, WA						
	<i>Myiopagis caniceps</i> (Swainson, 1835)	1	4							
	<i>Capsiempis flaveola</i> (Lichtenstein, 1823)	1	1, 3	AMNH, WA						
	<i>Phaeomyias murina</i> (Spix, 1825)			WA						
	<i>Phyllomyias virescens</i> (Temminck, 1824)	1	3, 6	WA				1	1	
	<i>Phyllomyias fasciatus</i> (Thunberg, 1822)		3, 6	WA						
	<i>Phyllomyias griseocapilla</i> Sclater, 1862		3					1		
	<i>Polysticus superciliaris</i> (Wied, 1831)			AMNH, XC, WA						
	<i>Serpophaga nigricans</i> (Vieillot, 1817)		3	AMNH, WA						
	<i>Serpophaga subcristata</i> (Vieillot, 1817)	1	3, 4, 5, 6	AMNH, WA						
	<i>Attila phoenicurus</i> Pelzeln, 1868			AMNH						
	<i>Attila rufus</i> (Vieillot, 1819)	1	3, 4, 6					1	1	
	<i>Legatus leucophaeus</i> (Vieillot, 1818)	1								PM
	<i>Ramphotrigon megacephalum</i> (Swainson, 1835)		6	AMNH						
	<i>Myiarchus swainsoni</i> Cabanis & Heine 1859		3, 6							
	<i>Myiarchus ferox</i> (Gmelin, 1789)	1	3, 4, 6	AMNH						
	<i>Myiarchus tyrannulus</i> (Statius Müller, 1776)	1								
	<i>Sirystes sibilator</i> (Vieillot, 1818)	1	3, 6	AMNH						
	<i>Pitangus sulphuratus</i> (Linnaeus, 1766)	1	1, 3, 4							PM
	<i>Machetornis rixosa</i> (Vieillot, 1819)		3							
	<i>Myiodynastes maculatus</i> (Statius Müller, 1776)	1		WA						PM
	<i>Megarynchus pitangua</i> (Linnaeus, 1766)	1	3, 4, 6	AMNH						
	<i>Myiozetetes cayanensis</i> (Linnaeus, 1766)			WA						
	<i>Myiozetetes similis</i> (Spix, 1825)	1	3, 4, 6							
	<i>Tyrannus albogularis</i> Burmester, 1856		4							
	<i>Tyrannus melancholicus</i> Vieillot, 1819	1	3, 4, 6	AMNH						PM
	<i>Tyrannus savana</i> Daudin, 1802		3	WA						
	<i>Empidonomus varius</i> (Vieillot, 1818)	1		AMNH, ZUEC						
	<i>Colonia colonus</i> (Vieillot, 1818)	1	3, 4	AMNH, WA						
	<i>Arundinicola leucocephala</i> (Linnaeus, 1764)		3							
	<i>Fluvicola nengeta</i> (Linnaeus, 1766)	1	3, 4							
	<i>Muscipira vetula</i> (Lichtenstein, 1823)	1	1, 3, 6	AMNH, WA				1	1	
	<i>Gubernetes yetapa</i> (Vieillot, 1818)		3, 4	WA						
	<i>Myiophobus fasciatus</i> (Statius Müller, 1776)	1	1, 3	AMNH, WA						PM
	<i>Cnemotriccus fuscatus</i> (Wied, 1831)	1								
	<i>Lathrotriccus euleri</i> (Cabanis, 1868)	1	3	AMNH, WA						PM
	<i>Contopus cinereus</i> (Spix, 1825)		3							
	<i>Satrapa icterophrys</i> (Vieillot, 1818)		3							
	<i>Knipolegus lophotes</i> Boie, 1828	1	2, 3, 4, 6	WA						
	<i>Knipolegus nigerrimus</i> (Vieillot, 1818)	1	1, 2, 3, 4, 5, 6	AMNH, WA				1	1	
	<i>Knipolegus cyanirostris</i> (Vieillot, 1818)	1	1, 3	WA						
	<i>Xolmis velatus</i> (Lichtenstein, 1823)		3	WA						
	<i>Nengetus cinereus</i> (Vieillot, 1816)		3, 4, 6							

Family	Species	Present study	Bibliographic resources	Databases	Status			Endem.	E.R.D.	Migr.
					Taxon	MG	BR			
Vireonidae Swainson, 1837										
	<i>Cyclarhis gujanensis</i> (Gmelin, 1789)	1	1, 3, 4, 5, 6	AMNH,XC, WA						
	<i>Hylophilus amaurocephalus</i> (Nordmann, 1835)		4	AMNH						
	<i>Hylophilus poicilotis</i> Temminck, 1822	1	3, 4, 6	XC, WA				1	1	
Hirundinidae Rafinesque, 1815										
	<i>Pygochelidon cyanoleuca</i> (Vieillot, 1817)	1	3, 4, 6	AMNH, XC, WA						
	<i>Stelgidopteryx ruficollis</i> (Vieillot, 1817)		3	AMNH						
	<i>Progne tapera</i> (Vieillot, 1817)		3, 4							
	<i>Progne chalybea</i> (Gmelin, 1789)	1	3, 4							PM
	<i>Tachycineta leucorrhoa</i> (Vieillot, 1817)		3							
Troglodytidae Swainson, 1831										
	<i>Troglodytes musculus</i> Naumann, 1823	1	3, 4, 6	AMNH						
Donacobiidae Aleixo & Pacheco, 2006										
	<i>Donacobius atricapilla</i> (Linnaeus, 1766)		3							
Turdidae Rafinesque, 1815										
	<i>Turdus flavipes</i> Vieillot, 1818	1	3, 4, 6	AMNH, XC, WA						M
	<i>Turdus leucomelas</i> Vieillot, 1818	1	3, 4	WA						
	<i>Turdus rufiventris</i> Vieillot, 1818	1	1, 3, 4, 6	XC, WA						
	<i>Turdus amaurochalinus</i> Cabanis, 1850	1	3, 4	XC, WA						PM
	<i>Turdus subalaris</i> (Seebohm, 1887)	1	4					1	1	PM
	<i>Turdus albicollis</i> Vieillot, 1818	1	3, 6	AMNH						
Mimidae Bonaparte, 1853										
	<i>Mimus saturninus</i> (Lichtenstein, 1823)	1	3, 4, 6	AMNH, XC, WA						
Passeridae Rafinesque, 1815										
	<i>Passer domesticus</i> (Linnaeus, 1758)		3, 4							
Motacilidae Horsfield, 1821										
	<i>Anthus chii</i> Vieillot, 1818		3, 4							
	<i>Anthus hellmayri</i> Hartert, 1909		5	WA						
Fringillidae Leach, 1820										
	<i>Spinus magellanicus</i> (Vieillot, 1805)		4, 6	WA						
	<i>Chlorophonia cyanea</i> (Thunberg, 1822)		3, 4	WA						
	<i>Euphonia chlorotica</i> (Linnaeus, 1766)	1	3							
	<i>Euphonia violacea</i> (Linnaeus, 1758)		4							
	<i>Euphonia pectoralis</i> (Latham, 1801)		3, 6					1		
Passerellidae Cabanis & Heine, 1850										
	<i>Ammodramus humeralis</i> (Bosc, 1792)	1	4							
	<i>Arremon taciturnus</i> (Hermann, 1783)	1								
	<i>Arremon semitorquatus</i> Swainson, 1838		1, 6	AMNH				1		
	<i>Zonotrichia capensis</i> (Statius Müller, 1776)	1	1, 3, 4, 5, 6	AMNH, FJNV, XC						
Icteridae Vigors, 1825										
	<i>Leistes superciliaris</i> (Bonaparte, 1850)		4							
	<i>Cacicus haemorrhous</i> (Linnaeus, 1766)	1		AMNH						
	<i>Molothrus bonariensis</i> (Gmelin, 1789)	1	3, 4, 6							
	<i>Gnorimopsar chopi</i> (Vieillot, 1819)	1	3, 4, 6	AMNH						
	<i>Agelasticus cyanopus</i> (Vieillot, 1819)		3							
	<i>Chrysomus ruficapillus</i> (Vieillot, 1819)		3							
Parulidae Wetmore, Friedmann, Lincoln, Miller, Peters, van Rossem, Van Tyne & Zimmer 1947										
	<i>Geothlypis aequinoctialis</i> (Gmelin, 1789)		3, 4, 5, 6	AMNH, XC, WA						
	<i>Myiothlypis flaveola</i> Baird, 1865		1	WA						
	<i>Basileuterus culicivorus</i> (Deppe, 1830)	1	1, 3, 4, 6	AMNH, XC, WA						
Mitrospingidae Barker, Burns, Klicka, Lanyon & Lovette, 2013										
	<i>Orthogonys chloricterus</i> (Vieillot, 1819)		3, 6					1		
Cardinalidae Ridgway, 1901										
	<i>Piranga flava</i> (Vieillot, 1822)	1	3, 4, 6	AMNH						
	<i>Habia rubica</i> (Vieillot, 1817)	1	6	AMNH						
	<i>Cyanoloxia brissonii</i> (Lichtenstein, 1823)		6	AMNH						
Thraupidae Cabanis, 1847										
	<i>Orchesticus abeillei</i> (Lesson, 1839)	1	3	AMNH				1	1	
	<i>Embernagra platensis</i> (Gmelin, 1789)		2, 3, 4, 5, 6	XC, WA						
	<i>Embernagra longicauda</i> Strickland, 1844		5							
	<i>Emberizoides herbicola</i> (Vieillot, 1817)		3, 4							

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					Taxon	MG	BR			
Sittidae	<i>Hemithraupis ruficapilla</i> (Vieillot, 1818)	1	3, 4, 6	AMNH, WA				1	1	
	<i>Tersina viridis</i> (Illiger, 1811)		3, 4, 6							
	<i>Cyanerpes cyaneus</i> (Linnaeus, 1766)		4							
	<i>Dacnis cayana</i> (Linnaeus, 1766)	1	3, 4, 6	AMNH						
	<i>Saltator similis</i> d'Orbigny & Lafresnaye, 1837	1	1, 3, 4, 6	AMNH, XC, WA	VU					
	<i>Saltator maxillosus</i> Cabanis, 1851		2, 3, 4					1		
	<i>Coereba flaveola</i> (Linnaeus, 1758)	1	1, 3, 4, 6	AMNH, XC						
	<i>Asemospiza fuliginosa</i> (Wied, 1830)			WA						
	<i>Volatinia jacarina</i> (Linnaeus, 1766)	1	3, 4, 6	AMNH						
	<i>Trichothraupis melanops</i> (Vieillot, 1818)	1	1, 3, 4, 6	AMNH, MNRJ, WA						
	<i>Coryphospingus pileatus</i> (Wied, 1821)	1	1							
	<i>Tachyphonus coronatus</i> (Vieillot, 1822)	1	3	AMNH, WA				1	1	
	<i>Ramphocelus bresilia</i> (Linnaeus, 1766)		3					1		
	<i>Sporophila nigricollis</i> (Vieillot, 1823)	1	3, 4							
	<i>Sporophila ardesiaca</i> (Dubois, 1894)			WA				1		
	<i>Sporophila caerulescens</i> (Vieillot, 1823)	1	3, 4, 5, 6	AMNH, XC, WA						PM
	<i>Thlypopsis sordida</i> (d'Orbigny & Lafresnaye, 1837)	1		AMNH						
	<i>Castanozoster thoracicus</i> (Nordmann, 1835)		1, 2, 4, 6					1		
	<i>Donacospiza albifrons</i> (Vieillot, 1817)		2, 5	WA						
	<i>Microspingus lateralis</i> (Nordmann, 1835)	1	1, 2, 3, 4, 5	AMNH, XC, WA	VU			1		
	<i>Sicalis flaveola</i> (Linnaeus, 1766)	1	1, 3, 4, 6	WA						
	<i>Haplospiza unicolor</i> Cabanis, 1851	1	1, 3, 4, 6	AMNH, XC, WA				1	1	
	<i>Pipraeidea melanonota</i> (Vieillot, 1819)	1	3, 6	WA						
	<i>Stephanophorus diadematus</i> (Temminck, 1823)	1	1, 2, 3, 4, 5, 6	AMNH, FNJV, XC, WA	VU					
	<i>Cissopis leverianus</i> (Gmelin, 1788)	1	3	AMNH						
	<i>Schistochlamys ruficapillus</i> (Vieillot, 1817)	1	1, 2, 3, 4, 5, 6	AMNH, WA						
	<i>Thraupis sayaca</i> (Linnaeus, 1766)	1	3, 4, 6	AMNH, WA						
	<i>Thraupis cyanoptera</i> (Vieillot, 1817)	1	3, 4, 6					1	1	
	<i>Thraupis palmarum</i> (Wied, 1821)	1	4							
	<i>Thraupis ornata</i> (Sparrman, 1789)	1	3, 4	AMNH, WA				1	1	
	<i>Stilpinia cayana</i> (Linnaeus, 1766)	1	3, 4							
	<i>Tangara seledon</i> (Statius Müller, 1776)		3, 4					1		
	<i>Tangara cyanoventris</i> (Vieillot, 1819)	1	3, 4, 6	WA				1	1	
	<i>Tangara desmaresti</i> (Vieillot, 1819)	1	1, 3, 4, 5, 6	AMNH, MNRJ, XC, WA				1	1	